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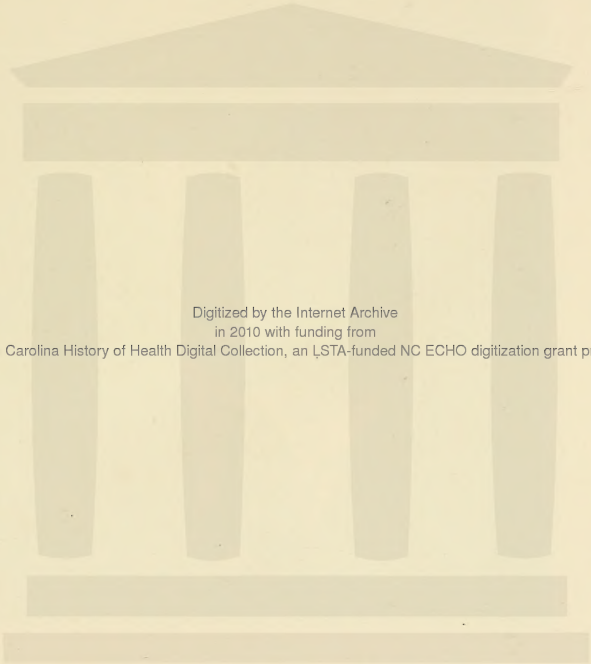

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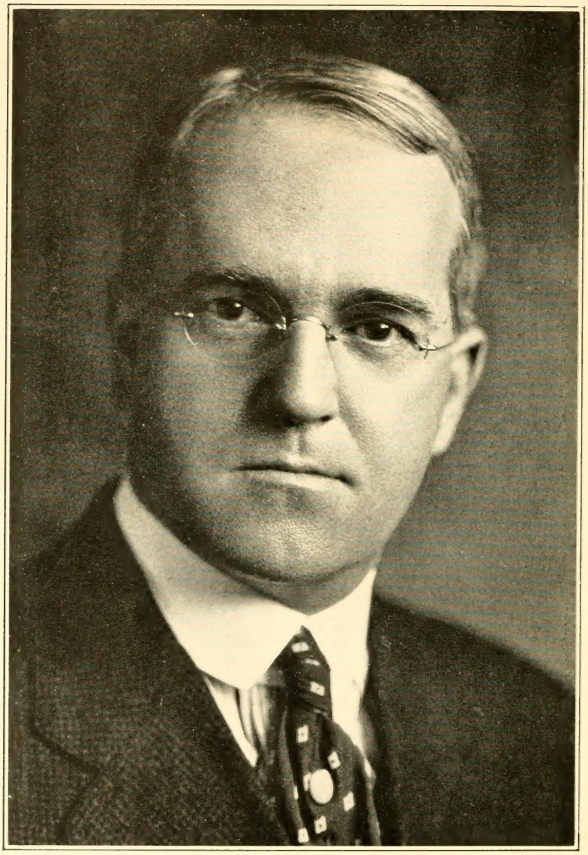

Yours sincerely,

H. A. Coyston.

TRANSACTIONS

OF THE

MEDICAL SOCIETY

OF THE

State of North Carolina

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SIXTY-NINTH
ANNUAL SESSION

HELD AT

WINSTON-SALEM, NORTH CAROLINA
APRIL 25, 26, 27, 1922

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"It is understood that the Society is not to be considered as endorsing all the views and opinions of authors of papers published in the Transactions of the Society."—*Extract from By-Laws, Chapter 10, Section 8.*

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*Missing Data Not to Be Found in Record

	Date	Place	Members in Attendance	Presidents	Vice-Presidents	Secretary	Treasurer	Members on roll*	Honorary Members*	Honorary Fellows*
	1849	Raleigh	25	F. J. Hill	.....	W. H. McKee	.....	25	....	....
1	1850	Raleigh	21	E. Strudwick	F. J. Haywood, C. E. Johnson, J. W. Williamson, W. G. Thomas.	W. H. McKee	W. G. Hill	38	9	....
2	1851	Raleigh	23	E. Strudwick	C. E. Johnson	W. H. McKee	W. G. Hill	46	9	....
3	1852	Wilmington	38	J. E. Williamson	Thomas N. Cameron, William G. Hill, Johnston B. Jones, N. J. Pittman.	E. B. Haywood	J. J. W. Tucker	72	12	....
4	1853	Fayetteville	24	J. E. Williamson	William G. Hill, Johnston P. Jones, J. B. G. Myers, N. J. Pittman.	W. W. Harris	Daniel Dupree	80	14	....
5	1854	Raleigh	37	J. H. Dickson	N. J. Pittman, J. B. G. Myers, J. Graham Tull, A. D. McLean.	S. S. Satchwell	Daniel Dupree	84	17	....
6	1855	Salisbury	23	J. H. Dickson	J. Graham Tull, Owen Hadley, A. D. McLean, Hugh Kelly.	S. S. Satchwell	J. B. Dunn	96	18	....
7	1856	Raleigh	35	C. E. Johnson	Marcellus Whitehead, E. R. Gibson, Johnston B. Jones, O. F. Manson.	S. S. Satchwell	J. B. Dunn	101	22	....
8	1857	Edenton	25	C. E. Johnson	Marcellus Whitehead, O. F. Manson, H. W. Faison, E. T. Gibson.	W. G. Thomas	J. B. Dunn	113	16	....
9	1858	New Bern	69	W. H. McKee	Edward Warren, C. W. Graham, Caleb Winslow, A. B. Pierce.	W. G. Thomas	J. B. Dunn	172	18	....
10	1859	Statesville	81	W. H. McKee	James G. Ramsey, P. E. Hines, J. R. Mercer, W. T. Howard.	W. G. Thomas	C. W. Graham	.....	.....	....
11	1860	Washington	64	N. J. Pittman	P. T. Henry, R. H. Winborne, M. Whitehead, T. S. Leach.	W. G. Thomas	C. W. Graham	233	18	....
12	1861	Morganton	23	N. J. Pittman	J. J. Summerell, C. T. Murphy, G. W. Hodges, W. A. B. Norcom.	W. G. Thomas	C. W. Graham	244	18	....
13	1866	Raleigh	20	J. J. Summerell	.....	W. G. Thomas	C. W. Graham	.....	.....	....
14	1867	Tarboro	41	W. G. Thomas	E. Burke Haywood, R. H. Winborne, W. L. Barrow, J. W. Jones.	S. S. Satchwell	C. W. Graham	288	11	....
15	1868	Warrenton	27	S. S. Satchwell	Hugh Kelly, George A. Foote, Charles J. O'Hagan, J. H. Baker.	Thomas F. Wood	J. W. Jones	.....	.....	....
16	1869	Salisbury	36	E. B. Haywood	Thomas E. Wilson, A. B. Pierce, C. T. Murphy, M. A. Locke.	Thomas F. Wood	J. W. Jones	.....	.....	....
17	1870	Wilmington	38	C. J. O'Hagan	E. A. Anderson, F. N. Lucky, W. R. Sharpe, R. L. Payne.	Thomas F. Wood	J. W. Jones	.....	.....	....
18	1871	Raleigh	35	Hugh Kelly	D. N. Patterson, R. C. Pearson, J. B. Seaby, G. L. Kirby.	Thomas F. Wood	J. W. Jones	.....	.....	....
19	1872	New Bern	34	W. G. Hill	H. W. Faison, R. I. Hicks, G. H. Macon, W. A. B. Norcom.	James McKee	J. W. Jones	.....	.....	....

ROSTER OF OFFICERS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1922

*Missing Data Not to Be Found in Record

Date	Place	Members in Attendance	President	Vice-Presidents	Secretary	Treasurer	Members on Roll	Honorary Members*	Honorary Fellows*
20 1873	Statesville	43	M. Whitehead	W. T. Ennett, William Little, Charles Duffy, T. P. Jerman.	James McKee	H. T. Bahnson	....	....	....
21 1874	Charlotte	56	W. A. B. Norcom	J. B. Jones, R. F. Lewis, C. G. Cox, J. L. Knight.	James McKee	H. T. Bahnson	....	....	....
22 1875	Wilson	60	J. W. Jones	Walter Debnam, J. A. Gibson, William Little, D. N. Patterson.	James McKee	H. T. Bahnson	148	5	....
23 1876	Fayetteville	33	Peter E. Hines	J. H. Baker, G. G. Smith, T. D. Haigh, J. K. Hall.	James McKee	H. T. Bahnson	157	4	....
24 1877	Salem	42	George A. Foote	J. K. Hall, B. W. Robinson, A. Holmes, A. A. Hill.	James McKee	A. G. Carr	177	4	....
25 1878	Goldsboro	79	R. L. Payne	E. M. Rountree, Richard Anderson, S. B. Flowers, L. A. Smith.	L. J. Picot	A. G. Carr	194	6	....
26 1879	Greensboro	109	Chas. Duffy, Jr.	J. A. Gibson, Willis Alston, James McKee, A. A. Hill.	L. J. Picot	A. G. Carr	198	6	....
27 1880	Wilmington	105	J. F. Shaffner	J. K. Hall, W. C. McDuffie, W. R. Wilson, R. F. Lewis.	L. J. Picot	A. G. Carr	225	6	....
28 1881	Asheville	92	R. B. Haywood	J. E. McKee, W. H. Lilly, R. H. Speight, W. J. H. Bellamy.	L. J. Picot	A. G. Carr	254	6	....
29 1882	Concord	65	Thos. F. Wood	T. J. Moore, D. J. Cain, S. E. Evans, John McDonald.	L. J. Picot	A. G. Carr	297	7	....
30 1883	Tarboro	112	J. K. Hall	A. W. Knox, J. M. Hadley, E. S. Foster, John Whitehead.	L. J. Picot	A. G. Carr	310	7	....
31 1884	Raleigh	112	A. B. Pierce	F. W. Potter, G. W. Graham, R. Dillard, G. W. Long.	L. J. Picot	A. G. Carr	318	7	....
32 1885	Durham	173	W. C. McDuffie	James McKee, T. E. Anderson, W. H. Whitehead, A. G. Carr.	W. C. Murphy	R. L. Payne, Jr.	424	6	....
33 1886	New Bern	113	Joseph Graham	H. T. Bahnson, L. J. Picot, J. L. McMillan, W. W. Faison.	J. M. Baker	R. L. Payne, Jr.	438	7	....
34 1887	Charlotte	112	H. T. Bahnson	G. G. Smith, J. L. Nicholson, C. M. Van Poole, H. B. Ferguson.	J. M. Baker	R. L. Payne, Jr.	452	7	....
35 1888	Fayetteville	133	T. D. Haigh	W. T. Ennett, J. A. Dunn, T. E. Anderson.	J. M. Baker	C. M. Van Poole	306	6	....
36 1889	Elizabeth C	50	W. T. Ennett	W. J. Jones, S. W. Stevenson, G. W. Long.	J. M. Baker	C. M. Van Poole	410	6	....
37 1890	Oxford	160	G. G. Thomas	R. L. Payne, Jr., Richard Dillard, S. D. Booth.	J. M. Hays	C. M. Van Poole	414	6	....
38 1891	Asheville	135	R. H. Lewis	S. W. Battle, J. L. Nicholson, W. H. Lilly.	J. M. Hays	C. M. Van Poole	422	6	....
39 1892	Wilmington	162	W. T. Cheatham	T. S. Burbank, J. W. Long, W. H. H. Cobb, W. D. Hilliard.	J. M. Hays	C. M. Van Poole	431	6	....
40 1893	Raleigh	221	J. W. McNeill	W. C. Galloway, H. H. Harris, J. M. Hadley, Thomas Hill.	R. D. Jewett	M. P. Perry	447	5	3

41	1894	Greensboro	166	W. H. H. Cobb	J. A. Hodge, R. W. Tate, Willis Alston, M. H. Fletcher.	R. D. Jewett	M. P. Perry	454	5	3
42	1895	Goldsboro	.....	J. H. Tucker	J. Howell Way, W. H. Harrell, O. McMullan, C. A. Misenheimer.	R. D. Jewett	M. P. Perry	436	7	3
43	1896	Winston-Salem	158	R. L. Payne	S. D. Booth, J. P. Munroe, J. A. Burroughs, J. E. Grimsley.	R. D. Jewett	M. P. Perry	452	7	3
44	1897	Morehead City	103	P. L. Murphy	J. C. Walton, A. A. Kent, M. R. Adams, B. L. Long.	R. D. Jewett	M. P. Perry	406	6	3
45	1898	Charlotte	.....	Francis Duffy	E. C. Register, A. T. Cotton, J. B. H. Knight, F. H. Russell.	R. D. Jewett	M. P. Perry	437	6	21
46	1899	Asheville	152	L. J. Picot	I. W. Faison, J. W. White, H. H. Dodson, W. C. Brownson.	Geo. W. Pressley	G. T. Sikes	489	6	16
47	1900	Tarboro	115	George W. Long	C. M. Van Poole, James M. Parrott, T. B. Williams, W. D. Hilliard.	Geo. W. Pressley	G. T. Sikes	482	6	21
48	1901	Durham	186	Julian M. Baker	M. H. Fletcher, C. A. Julian, D. A. Stanton, E. M. Summercll.	Geo. W. Pressley	G. T. Sikes	515	5	18
49	1902	Wilmington	147	Robert S. Young	A. G. Carr, E. D. Dixon-Carroll, I. M. Taylor, J. M. Parrott.	Geo. W. Pressley	G. T. Sikes	546	5	20
50	1903	Hot Springs	155	A. W. Knox	E. G. Moore, C. A. Julian, W. W. McKenzie, J. L. Nicholson.	J. Howell Way	G. T. Sikes	530	6	19
51	1904	Raleigh	326	H. B. Weaver	John Hey Williams, John C. Rodman, S. F. Pfohl.	J. Howell Way	G. T. Sikes	1,033	8	17
52	1905	Greensboro	361	David T. Taylor	C. A. Julian, John T. Burrus, I. W. Faison.	J. Howell Way	G. T. Sikes	1,175	8	17
53	1906	Charlotte	406	Ed. C. Register	L. B. McBrayer, W. H. Cobb, W. O. Spencer.	J. Howell Way	G. T. Sikes	1,234	8	16
54	1907	Morehead City	217	Samuel D. Booth	C. M. Strong, J. E. McLoughlin, W. F. Hargrave.	David A. Stanton	H. McK. Tucker	888	8	16
55	1908	Winston-Salem	372	J. Howell Way	J. E. Stokes, J. A. Turner, W. H. Dixon.	David A. Stanton	H. McK. Tucker	998	7	28
56	1909	Asheville	337	J. F. Highsmith	C. M. Van Poole, D. A. Garrison, D. O. Dees.	David A. Stanton	H. McK. Tucker	1,067	7	25
57	1910	Wrightsville Beach		*J. A. Burroughs	E. J. Wood, John Q. Myers, L. D. Wharton.	David A. Stanton	H. D. Walker	1,080	8	35
			276	E. J. Wood	I. V. McGougan, W. E. Warren, L. N. Glenn.	David A. Stanton	H. D. Walker	880	8	45
58	1911	Charlotte	412	C. M. VanPoole	I. P. Munroe, W. P. Horton, J. G. Murphy.	David A. Stanton	H. D. Walker	950	8	44
59	1912	Hendersonville	296	A. A. Kent	W. R. Harris, E. S. Bulluck, L. B. Morse.	John A. Ferrel	H. D. Walker	1,128	8	47
60	1913	Morehead City	232	J. P. Munroe	E. T. Dickinson, J. T. J. Battle, D. E. Sevier.	John A. Ferrel	H. D. Walker	1,228	8	47
61	1914	Raleigh	431	J. M. Parrott	I. J. Phillips, C. W. Moseley, S. M. Crowell.	John A. Ferrel	H. D. Walker	1,221	9	68
62	1915	Greensboro	443	L. B. McBrayer	I. L. Nicholson, L. N. Glenn, W. H. Hardison.	Benj. K. Hays	W. M. Jones	1,228	10	79
63	1916	Durham	406	M. H. Fletcher	D. J. Hill, J. L. Spruill, J. H. Shuford.	Benj. K. Hays	W. M. Jones	1,271	11	81
64	1917	Asheville	280	Charles O'H Laughinghouse	Wm. deB. MacNider, Jos. B. Greene, Ben F. Royal.	Benj. K. Hays	W. M. Jones	1,087	11	81
65	1918	Pinehurst	192	I. W. Faison		Secy-Treas.	Acting			
66	1919	Pinehurst	335	Cyrus Thompson	J. W. Halford, T. W. Davis, A. McN. Blair.	Benj. K. Hays	L. B. McBrayer	1,306	11	100
67	1920	Charlotte	479	C. V. Reynolds	H. D. Walker, F. Stanley Whitaker, Thos. I. Fox.	Benj. K. Hays	L. B. McBrayer	1,497	12	100
68	1921	Pinehurst	404	T. E. Anderson	C. S. Lawrence, W. H. Ward, J. M. Manning.	Benj. K. Hays	L. B. McBrayer	1,491	12	93
69	1922	Winston-Salem	507	H. A. Royster	W. T. Parrot, B. C. Nalle, J. R. McCracken.	Secretary-Treasurer L. B. McBrayer		1,571	12	100

*Deceased

EARLY HISTORY OF THE NORTH CAROLINA MEDICAL SOCIETY FROM ORGANIZATION TO 1804

Date	Place	President	Vice-President	Corresponding Secretary	Secretary	Recording Secretary	Treasurer	Censors
Dec. 24, 1799, or April 16, 1800	Raleigh	Richard Fenner	Nathaniel Loomis, John Claiborne	Calvin Jones		Wm. B. Hill	Cargill Massenburg	Sterling Wheaton James Webb Jas. John Pasteur Jason Haul
Dec. 1, 1800	Raleigh	Richard Fenner	—	—	Sterlin Wheaton	—	—	—
Dec. 1, 1801	Raleigh	John C. Osborne	Thomas Mitchel Richard Fenner	Calvin Jones	Sterlin Wheaton	—	Cargill Massenburg	James Webb John Sibley
1802	Raleigh	John C. Osborne		Calvin Jones				
1803	Raleigh	John C. Osborne		Calvin Jones				
1804	Raleigh	John C. Osborne		Calvin Jones				

Charles H. Dickson, President, Wilmington 1859-1866
Charles E. Johnson, Raleigh 1859-1866
Caleb Winslow, Hertford 1859-1866
Otis F. Manson, Townsville 1859-1866
William H. McKee, Raleigh 1859-1866
Christopher Happoldt, Morganton 1859-1866
J. Graham Tull, New Bern 1859-1866
Samuel T. Iredell, Secretary 1859-1866

N. J. Pittman, President, Tarboro 1866-1872
E. Burke Haywood, Raleigh 1866-1872
R. H. Winborne, Edenton 1866-1872
S. S. Satchwell, Rocky Point 1866-1872
J. J. Summerell, Salisbury 1866-1872
R. B. Haywood, Raleigh 1866-1872
M. Whitehead, Salisbury 1866-1872
J. E. Shaffner, Salem 1866-1872
William Little, Secretary 1866-1872

Charles J. O'Hagan, President, Greenville 1872-1878
W. A. B. Norcom, Edenton 1872-1878
C. Tate, Murphy 1872-1878
George A. Foote, Warrenton 1872-1878
J. W. Jones, Tarboro 1872-1878
R. L. Payne, Lexington 1872-1878
Charles Duffy, Jr., Secretary, New Bern 1872-1878

P. E. Hines, President, Raleigh 1878-1884
T. D. Haigh, Fayettesville 1878-1884
George L. Kirby, Goldsboro 1878-1884
Thomas F. Wood, Wilmington 1878-1884
Joseph Graham, Charlotte 1878-1884
H. B. Bahnson, Secretary, Salem 1878-1884
R. H. Lewis, Raleigh 1880-1884

William R. Wood, President, Scotland Neck 1884-1890
A. W. Knox, Raleigh 1884-1890
Francis Duffy, New Bern 1884-1890
P. L. Murphy, Morganton 1884-1890
Willis Alston, Littleton 1884-1890
W. H. J. Bellamy, Secretary, Wilmington 1884-1890
J. A. Reagan, Weaverville 1884-1890
R. L. Payne, Norfolk, Va. 1890-1892
George W. Purefoy, Asheville 1890-1892
George G. Thomas, Wilmington 1890-1894

Robert S. Young, Concord 1890-1894
George W. Long, Graham 1890-1894

W. H. Whitehead, President, Rocky Mount 1890-1896
L. J. Picot, Secretary, Littleton 1890-1896

Julian M. Baker, President, Tarboro 1892-1898
H. B. Weaver, Asheville 1892-1898
T. S. Burbank, Wilmington 1894-1898
J. M. Hayes, Greensboro 1894-1897
D. T. Tayloe, President, Washington 1896-1902
R. H. Whitehead, Chapel Hill 1896-1897
Thomas E. Anderson, Secretary, Statesville 1896-1900
Kemp P. Battle, Jr., Raleigh 1897-1902
J. Howell Way, Secretary, Waynesville 1897-1902
W. H. H. Cobb, Goldsboro 1898-1902
Albert Anderson, Raleigh 1898-1902

E. C. Register, President, Charlotte 1898-1902
Thomas S. McMullan, Hertford 1900-1902
John C. Walton, Richmond, Va. 1900-1902
George W. Pressley, Secretary, Charlotte 1902-1906

A. A. Kent, President, Lenoir 1902-1908
G. T. Sikes, Secretary, Grissom 1906-1908
Charles O'Hagan Laughinghouse, President, Greenville....1902-1908
M. H. Fletcher, President, Asheville 1902-1908
James M. Parrott, Kinston 1902-1908
J. T. J. Battle, Greensboro 1902-1908
Frank H. Russell, Wilmington 1902-1908

John Bynum, President, Winston-Salem 1908-1914
John C. Rodman, Washington 1908-1914
Benjamin K. Hays, Secretary 1908-1914
L. B. McBrayer, Asheville 1908-1914
William W. McKenzie, Salisbury 1908-1914
Henry H. Dodson, Greensboro 1908-1914
J. L. Nicholson, Richlands 1908-1914

J. Q. Myers, President, Charlotte 1914-1920
J. F. Highsmith, Fayetteville 1914-1920
H. A. Royster, Secretary, Raleigh 1914-1920
E. G. Moore, Elm City 1914-1920
J. G. Blount, Washington 1914-1920
M. L. Stevens, Asheville 1914-1920
*Charles T. Harper, Wilmington 1914-1915

BOARD OF MEDICAL EXAMINERS, 1920-1926

J. G. Murphy, Wilmington, Pharmacology, Materia Medica and Therapeutics.
L. A. Crowell, President, Lincolnton, Anatomy and Embryology.
L. N. Glenn, Gastonia, Surgery.
K. P. B. Bonner, Secretary, Raleigh, Obstetrics, Gynecology, and Pedriatrics.
W. P. Holt, Duke, Practice of Medicine.
W. M. Jones, Greensboro, Chemistry, Physiology and Hygiene.
C. A. Shore, Raleigh, Pathology, Bacteriology, Histology.

*Deceased 1915

ROSTER OF MEMBERS NORTH CAROLINA STATE BOARD OF HEALTH FROM ORGANIZATION IN 1877 TO 1922

Name	Address	Appointed by	Term
S. S. Satchwell, M.D., President	Rocky Point	State Society	1877 to 1878
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1877 to 1878
Joseph Graham, M.D.	Charlotte	State Society	1877 to 1878
Charles Duffy, Jr., M.D.	New Bern	State Society	1877 to 1878
Peter E. Hines, M.D.	Raleigh	State Society	1877 to 1878
George A. Foote, M.D.	Warrenton	State Society	1877 to 1878
S. S. Satchwell, M.D., President	Rock Point	State Society	1878 to 1884
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1878 to 1884
Charles J. O'Hagan, M.D., President	Greenville	State Society	1878 to 1882
George A. Foote, M.D.	Warrenton	State Society	1878 to 1882
Marcellus Whitehead, M.D.	Salisbury	State Society	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1878 to 1880
H. G. Woodfin, M.D.	Franklin	Gov. Z. B. Vance	1878 to 1880
A. R. Ledeux, Chemist	Chapel Hill	Gov. Z. B. Vance	1878 to 1880
William Cain, Civil Engineer	Charlotte	Gov. Z. B. Vance	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1881 to 1887
M. Whitehead, M.D., President	Salisbury	State Society	1881 to 1884
J. M. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1881 to 1883
William Cain, Civil Engineer	Charlotte	Gov. T. J. Jarvis	1881 to 1883
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1881 to 1883
J. W. Jones, M.D., President	Wake Forest	State Society	1883 to 1889
John McDonald	Washington	State Society	1883 to 1889
S. H. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1883 to 1885
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1883 to 1885
Arthur Winslow, Civil Engineer	Raleigh	Gov. T. J. Jarvis	1883 to 1886
R. H. Lewis, M.D.	Raleigh	State Board of Health	1884 to 1893
Thomas F. Wood, Secretary	Wilmington	State Society	1885 to 1887
William D. Hilliard, M.D.	Asheville	State Society	1885 to 1891
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1885 to 1891
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1885 to 1887
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1885 to 1887
R. H. Lewis, M.D., Secretary	Raleigh	State Society	1887 to 1897
H. T. Bahnson, M.D., President	Winston-Salem	State Society	1887 to 1893
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1887 to 1888
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1887 to 1889
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1887 to 1889
J. L. Ludlow, Civil Engineer	Winston	Gov. A. M. Scales	1888 to 1891
J. H. Tucker, M.D.	Henderson	Gov. D. G. Fowle	1888 to 1891
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. D. G. Fowle	1888 to 1891
J. L. Ludlow, Civil Engineer	Winston	State Society	1889 to 1893
J. A. Hodges, M.D.	Fayetteville	State Society	1889 to 1892
J. M. Baker, M.D.	Tarboro	Gov. T. M. Holt	1889 to 1893
J. H. Tucker, M.D.	Henderson	Gov. T. M. Holt	1891 to 1893
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. T. M. Holt	1891 to 1893
J. L. Ludlow, Civil Engineer	Winston	State Society	1891 to 1892
Thomas F. Wood, M.D., Secretary*	Wilmington	State Board of Health	1891 to 1897
George G. Thomas, M.D., President	Wilmington	State Society	1892 to 1897
S. Westray Battle, M.D.	Asheville	State Society	1891 to 1895
W. H. Harrell, M.D.	Williamston	State Board of Health	1892 to 1895
John Whitehead, M.D.	Salisbury	Gov. Elias Carr	1893 to 1895
W. H. G. Lucas	White Hall	Gov. Elias Carr	1893 to 1895
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1893 to 1895
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1893 to 1895
R. H. Lewis, Secretary	Raleigh	Gov. Elias Carr	1893 to 1895
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1894 to 1897
W. J. Lumsden, M.D.	Elizabeth City	State Society	1895 to 1897
John Whitehead, M.D.	Salisbury	State Society	1895 to 1897
W. H. Harrell, M.D.	Williamston	Gov. Elias Carr	1895 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1895 to 1897
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1895 to 1897
John C. Chase, Civil Engineer	Wilmington	Gov. D. L. Russell	1897 to 1899
Charles J. O'Hagan, M.D.	Raleigh	Gov. D. L. Russell	1897 to 1899
John D. Spicer, M.D.	Goldsboro	Gov. D. L. Russell	1897 to 1899
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1897 to 1899
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1897 to 1899
A. W. Shaffer, Civil Engineer	Raleigh	Gov. D. L. Russell	1899 to 1901
Charles O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1899 to 1901
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1899 to 1901
Albert Anderson, M.D.	Wilson	Gov. D. L. Russell	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1899 to 1901
A. W. Shaffer, Civil Engineer	Raleigh	Gov. D. L. Russell	1899 to 1901

*Died in 1892, leaving a five-year unexpired term, which was filled by the Board.

ROSTER OF MEMBERS—Continued

Name	Address	Appointed by	Term
George G. Thomas, M.D., President	Wilmington	State Society	1899 to 1901
S. Westray Battle, M.D.	Asheville	State Society	1899 to 1901
H. W. Lewis, M.D.	Jackson	State Society	1899 to 1901
H. H. Dodson, M.D.	Milton	State Society	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. C. B. Aycocok	1901 to 1907
W. P. Ivey, M.D.	Lenoir	Gov. C. B. Aycocok	1901 to 1907
George G. Thomas, M.D., President	Wilmington	Gov. C. B. Aycocok	1901 to 1905
Francis Duffy, M.D.	New Bern	Gov. C. B. Aycocok	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycocok	1901 to 1905
S. Westray Battle, M. D.	Asheville	State Society	1901 to 1907
H. W. Lewis, M.D.	Jackson	State Society	1901 to 1907
W. H. Whitehead, M. D.	Rocky Mount	State Society	1901 to 1905
J. L. Nicholson, M.D.	Richlands	State Society	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycocok	1903 to 1909
J. Howell Way, M.D.	Waynesville	Gov. R. B. Glenn	1905 to 1911
W. O. Spencer, M.D.	Winston	Gov. R. B. Glenn	1905 to 1911
George E. Thomas, M.D., President	Wilmington	State Society	1905 to 1911
Thomas E. Anderson, M.D.	Statesville	State Society	1905 to 1911
R. H. Lewis, M.D.	Raleigh	Gov. R. B. Glenn	1907 to 1913
E. C. Register, M.D.	Charlotte	Gov. R. B. Glenn	1907 to 1913
David T. Tayloe, M.D.	Washington	State Society	1907 to 1913
Jomes A. Burroughs, M.D.*	Asheville	State Society	1907 to 1909
J. E. Ashcraft, M.D.	Monroe	State Board of Health	1909 to 1913
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. W. W. Kitchin	1909 to 1915
J. Howell Way, M.D., President	Waynesville	Gov. W. W. Kitchin	1911 to 1917
W. O. Spencer, M.D.	Winston-Salem	Gov. W. W. Kitchin	1911 to 1917
Thomas E. Anderson, M.D.	Statesville	State Society	1911 to 1917
Charles O'H Laughinghouse, M.D.	Greenville	State Society	1911 to 1917
R. H. Lewis, M.D.	Raleigh	Gov. Locke Craig	1913 to 1919
Edw. J. Wood, M.D.	Wilmington	Gov. Locke Craig	1913 to 1919
A. A. Kent, M.D.	Lenoir	State Society	1913 to 1915
Cyrus Thompson, M.D.	Jacksonville	State Society	1913 to 1919
Fletcher R. Harris, M.D.	Henderson	State Board of Health	1913 to 1919
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. Locke Craig	1915 to 1921
J. Howell Way, M.D., President	Waynesville	Gov. T. W. Bickett	1917 to 1923
E. C. Register, M.D.¶	Charlotte	Gov. T. W. Bickett	1917 to 1923
Thomas E. Anderson, M.D.	Statesville	State Society	1917 to 1923
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1917 to 1923
Cyrus Thompson, M.D.	Jacksonville	State Society	1919 to 1925
Fletcher R. Harris, M.D.	Henderson	State Society	1919 to 1925
R. H. Lewis, M.D.	Raleigh	Gov. T. W. Bickett	1919 to 1925
E. J. Tucker, D.D.S.	Roxboro	Gov. T. W. Bickett	1919 to 1925
A. J. Crowell, M.D.	Charlotte	Gov. T. W. Bickett	1919 to 1923
Chas. E. Waddell, C.E.	Asheville	Gov. Cameron Morrisc	1922 to 1928

*Died leaving unexpired term. ¶Resigned to become member of General Assembly.

ROSTER OF MEMBERS—Continued

STATE BOARD OF EXAMINERS FOR NURSES

Miss Lois A. Toomer, President	Wilmington	(expires July 1,	1923)
Miss Effie E. Cain, Secy-Treas.	Salisbury	(" Oct. 1,	1922)
Miss Mary Laxton	Biltmore	(" July 1,	1923)
Dr. J. M. Parrott	Kinston	(" July 1,	1923)
Dr. D. A. Stanton	High Point	(" July 1,	1925)

STATUS OF SOCIETY MEMBERSHIP BY COUNTIES FOR YEARS 1909-1922

Counties	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922
Alamance	15	14	12	11	11	13	9	10	12	10	15	27	27	31
Alexander *a*														
Alleghany							2		2					
Anson	1	1	1	6	8	7				1	3	2	1	2
Ashe		1							1	15	8	7	5	9
Avery						8	7	9	9	7	6	4	5	4
Beaufort	11	11	16	15	14	14	14	14	10	11	10	14	12	14
Bertie	4	5	2	2	2	3	3	3	3	5	5	10	9	12
Bladen	3	3	4	4	5	7	7	6	9	8	9	8	7	7
Brunswick	4	2	2	2	5	4	5			2	2	2	1	1
Buncombe	54	58	63	64	69	68	70	71	74	76	81	83	92	96
Burke	10	13	12	11	13	15	17	17	16	17	6	11	12	11
Cabarrus	16	18	21	21	19	22	23	25	20	22	19	20	19	21
Caldwell	12	13	12	10	12	12	11	7	9	13	12	10	10	12
Camden *b*														
Carteret	7	7	6	7	6	7	7	9	7	4	7	9	9	8
Caswell	2	1	1	1	1	1	1	1	1	1	3	2	2	1
Catawba	12	12					15	13	18		5	18	16	22
Chatham	2	2	6		14	15	12	11	11	11	7	10	11	6
Cherokee	9	6	7	9	8	7	10	9	11	10	6	10	10	10
Chowan			7	5	8	9	7	4	3		6	8	7	6
Clay *c*														
Cleveland	13	13	14	15	15	16	13	13	16	16	17	19	16	19
Columbus	8	8	10	12	12	14	9	11	7	1	6	10	8	9
Craven	14	14	12	14	18	15	11	8	11	7	7	6	6	8
Cumberland	17	20	20	22	23	22	24	19	17	16	15	20	24	23
Currituck	3	6	4	4	4	6	7	6	6	1	5	5	5	5
Dare *d*														
Davidson	12	13	13	15	13	17	13	9	20	20	19	18	16	18
Davie	6	6	5	6				6	5	4	4	4	4	4
Duplin	10	10	9	8	9	7	4	7	10	9	9	10	12	11
Durham-Orange	24	26	28	31	32	38	40	41	44	35	33	45	40	43
Edgecomb	10	10	11	11	11	13	13	13	10	10	7	15	15	15
Forsyth	30	25	29	31	32	37	39	42	45	37	37	57	62	60
Franklin	9	11	11	11	10	10	12	11	10	11	11	12	10	12
Gaston	25	27	29	29	30	27	26	25	27	27	26	35	38	39
Gates											1			
Graham														
Granville	12	12	8	13	12	14	11	16	16	14	14	15	14	14
Greene	6	6	6	5	5	5	5	6	5	2	5	6	7	7
Guilford	64	65	56	58	59	62	71	66	68	67	72	77	78	80
Halifax	7	6	2	2	11	11	7	15	8	1	7	28	24	24
Harnett	19	15	14	17	17	16	17	15	17	15	14	16	15	16
Haywood	15	13	10	11	13	15	11	11	11	9	9	11	10	12
Henderson-Polk	14	14	17	17	11	14	14	15	15	11	13	15	13	13
Hertford	8	6	2		8	10	4	1	5	10	10	10	10	10
Hoke									10	11	10	10	8	6
Hyde	8	6	6	6	7	7			1	1	2	1	1	2
Iredell-Alexander	18	17	12	9	9	14	16	9	20	11	11	21	18	20
Jackson					2	3	5	2	2	2	5	5	6	6
Johnston	13	15	19	18	18	19	21	19	22	16	24	22	23	26
Jones														1
Lee					7	8	7	8	8	6	8	8	8	10
Lenoir	9	12	6	8	9	12	14	15	16	15	17	22	19	20
Lincoln	10	10	10	11	12	13	14	11	9	11	15	16	14	13
Macon-Clay	5				4	4	5	5	4	6	6	6	7	7
Madison	12			10	7	8	11	9	10		11	11	12	8
Martin	13	13	13	12	13	14	14	15	17	12	11	16	14	12
McDowell	8	4	5	6	6	7	7	7	8	7	6	6	5	5
Mecklenburg	51	57	44	50	63	69	71	74	63	49	97	104	107	110
Mitchell	7	4	5	5	4	2	2	2	1		4	5	8	10
Montgomery	7	9	7	7	8	6	10	9	9	8	6	8	11	10
Moore	10	11	21	21	13	16	15	18	10	15	16	16	17	21
Nash				1		19	18	26	27	21	26	25	26	30
New Hanover	23	21	21	22	31	28	33	41	30	29	38	40	46	51
Northampton	8	11	9	1	12	12	11	10	14	11	13	10	11	11
Onslow	4	6	11	10	12	10	8	9	11	7	9	8	7	7
Orange *e*	1	1	1	1	8								6	
Pamlico	5	4	4	4	5	5	5	5	5	4	4	5	6	5
Pasquotank-Camden-Dare	10	11	12	12	13	15	15	17	19	16	15	16	11	19
Pender		2	2	2	2					4	3	1	1	2
Perquimans														
Person	9	9	10	11	11	8	11	13	12		12	10	11	10
Pitt	14	10	10	5	9	5	15	9	14	5	18	24	19	24
Polk *f*														

STATUS OF MEMBERSHIP BY COUNTIES—(Continued)

Counties	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922
Randolph	9	10	8	9	7	12	14	11	13	11	12	13	15	14
Richmond	1	12	1	10	....	10	13	13	14	11	13	12	14	13
Robeson	20	15	22	23	35	24	16	22	16	8	31	35	34	33
Rockingham	1	16	16	16	18	19	17	10	4	15	16	20	23	25
Rowan	23	24	26	24	23	26	22	25	23	22	24	28	31	32
Rutherford	22	23	24	18	19	20	19	21	14	17	18	20	12	18
Sampson	10	11	11	12	12	14	14	18	15	10	11	13	14	12
Scotland	10	11	9	9	11	12	12	12	13	10	9	10	12	12
Stanly	8	11	10	11	11	13	14	9	14	11	11	15	12	11
Stokes	11	9	10	11	7	12	13	12	10	5	5	10	6	12
Surry	15	15	13	14	19	21	19	18	23	24	27	28	25	25
Swain	8	....	....	....	....	....	....	....	6	7	2	3	1	4
Transylvania	1	....	5	5	6	7	6	7	5	....	1	1	1	5
Tyrell g	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Union	14	14	15	16	17	16	16	12	13	15	14	16	17	17
Vance	9	12	11	11	11	10	11	13	10	4	5	11	11	10
Wake	49	53	56	54	41	53	57	62	70	56	81	68	73	76
Warren	....	....	4	5	5	5	8	7	7	6	3	8	8	7
Washington-Tyrell	....	....	....	....	....	....	....	....	....	....	....	....	10	9
Watauga	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Wayne	10	....	....	16	19	13	7	17	19	18	27	28	24	33
Wilkes	8	11	11	6	9	8	7	6	9	8	10	10	11	10
Wilson	16	17	17	17	17	24	22	22	24	21	25	29	31	28
Yadkin	8	6	6	6	7	7	6	....	....	....	10	2	5	4
Yancey	3	....	....	....	....	....	....	....	....	....	3	3	1	1
Totals	1012	997	996	1036	1133	1220	1221	1228	1271	1087	1306	1497	1491	1571

a See Iredell-Alexander; b see Pasquotank-Camden-Dare; c see Macon-Clay; d see Pasquotank-Camden-Dare; e see Durham-Orange; f see Henderson-Polk; g see Washington-Tyrell.

HONORARY FELLOWS

Adams, M. R. ..... Statesville
Alexander, Annie L. ..... Charlotte
*Alston, B. P. ..... Epsom
Ambler, C. P. ..... Asheville
Anderson, Albert ..... Raleigh
Anderson, Thos. Eli ..... Statesville
*Archey, L. M. ..... Concord
Asbury, F. E. ..... Ashboro
Attamore, Geo. S. ..... Stonewall
*Bahnson, H. T. ..... Winston-Salem
Baker, J. M. ..... Tarboro
*Barrier, P. A. ..... Mt. Pleasant
Battle, J. T. J. ..... Greensboro
*Battle, Kemp P. ..... Raleigh
Battle, S. W. ..... Asheville
Beall, Wm. P. ..... Greensboro
*Bellamy, W. J. H. ..... Wilmington
Boddie, N. P. ..... Durham
*Bolton, Mahlon ..... Rich Square
*Booth, Samuel D. ..... Oxford
*Bulluck, D. Wm. ..... Wilmington
Bynum, John ..... Winston-Salem
Caldwell, D. G. ..... Concord
Cheatham, Archibald ..... Durham
*Clark, G. L. ..... Clarkton
Council, J. B. ..... Salisbury
Covington, J. M. ..... Wadesboro
*Croom, J. D. ..... Maxton
Dalton, David N. ..... Winston-Salem
De Armon, J. McC. ..... Charlotte
*Denny, Wm. W. ..... Pink Hill
Dillard, Richard, Jr. ..... Edenton
Dodson, H. H. ..... Greensboro
*Duffy, Charles ..... New Bern
*Duffy, Francis ..... New Bern
Edgerton, Jas. L. ..... Hendersonville
Edwards, G. C. ..... Hookerton
Ellis, R. C. ..... Shelby
Faison, I. W. ..... Charlotte
Faison, Wm. W. ..... Goldsboro
Fletcher, M. H. ..... Asheville
Fox, M. F. ..... Guilford College
Freeman, Richard A. ..... Burlington
Galloway, W. C. ..... Wilmington
Gibbon, Robert L. ..... Charlotte
Goodman, E. G. ..... Lanvale
Goodwin, A. W. ..... Raleigh
*Graham, Joseph ..... Charlotte
Graham, Wm. A. ..... Charlotte
Griffin, J. A. ..... Clayton
*Hall, Wright ..... Wilmington
Hargrove, R. H. ..... Robersonville
Harris, F. R. ..... Henderson
Harris, I. A. ..... Alexander
Haywood, F. J. ..... Raleigh
Haywood, Hubert ..... Raleigh
Hicks, Wm. N. ..... Durham
*Hill, L. H. ..... Germanton
*Hudson, Wm. L. ..... Dunn
Hughes, Francis W. ..... New Bern
Hunter, L. W. ..... Charlotte
Irwin, J. R. ..... Charlotte
Jewett, Robert D. ..... Wilmington
Johnson, N. M. ..... Durham
Jordan, T. M. ..... Raleigh
Knight, J. B. H. ..... Williamston
Knox, A. W. ..... Raleigh
Leggett, Kenelm ..... Hobgood
Lewis, H. W. ..... Jackson
Lewis, R. H. ..... Raleigh
Long, Benj. L. ..... Hamilton
*Long, Geo. W. ..... Graham
Long, J. W. ..... Greensboro
Love, W. J. ..... Wilmington
McDonald, A. D. ..... Wilmington
McGee, J. W. ..... Raleigh
*McKay, A. M. ..... Summerville
*McKay, John A. ..... Buies Creek
*McKee, James ..... Raleigh
McMillan, Benj. F. ..... Red Springs
McMillan, J. D. ..... Edenton
*McMillan, J. L. ..... Red Springs
McMillan, W. D. ..... Wilmington
McNeill, J. Wm. ..... Fayetteville
*McNeill, Wm. M. ..... Buies Creek
Manning, J. M. ..... Durham
*Miller, J. F. ..... Goldsboro
Misenheimer, C. A. ..... Charlotte
*Misenheimer, Thos. F. ..... Morven
Monroe, W. A. ..... Sanford
Moore, C. E. ..... Wilson
Moore, Edwin G. ..... Elm City
Munroe, J. P. ..... Charlotte
Nelson, R. J. ..... Robersonville
*Nicholson, J. L. ..... Richland
Nicholson, P. A. ..... Washington
Nicholson, Sam T. ..... Washington
Nobles, Jos. E. ..... Greenville
Noble, R. J. ..... Selma
*Pate, Wm. T. ..... Gibson

Pemberton, Wm. D. ..... Concord
Perry, M. P. ..... Macon
*Pharr, T. F. ..... Concord
Pharr, Wm. W. ..... Charlotte
Picot, L. J. ..... Littleton
*Prince, D. M. ..... Laurinburg
Purefoy, G. W. ..... Asheville
*Register, Edw. C. ..... Charlotte
*Ritter, F. W. ..... Moyock
Royster, W. I. ..... Raleigh
Schonwald, J T. ..... Wilmington
*Shaffner, J. F., Sr. ..... Winston-Salem
Sikes, G. T. ..... Grissom
Smith, R. A. ..... Goldsboro
Snipes, E. P. ..... Jonesboro
Speight, R. H., Sr. ..... Whitakers
Stamps, Thos. ..... Lumber Bridge
Stanton, D. A. ..... High Point
*Stevens, J. A. ..... Clinton
Summerell, E. M. ..... China Grove
Tayloe, D. T. ..... Washington
*Taylor, I. M. ..... Morganton
*Thomas, G. G. ..... Wilmington
Trantham, H. T. ..... Salisbury
Tull, Henry ..... Kinston
Van Pool, C. M. ..... Salisbury
Von Ruck, Karl ..... Asheville
Ward, W. H. ..... Plymouth
Way, J. Howell ..... Waynesville
Weaver, H. B. ..... Asheville
*Whitaker, R. A. ..... Kinston
White, J. W. ..... Wilkesboro
Whitehead, John ..... Salisbury
*Whitehead, W. H. ..... Rocky Mount
Whitfield, Wm. Cobb ..... Grifton
Whittington, W. P. ..... Asheville
*Williams, J. H. ..... Asheville
Wilson, A. R. ..... Greensboro
*Young, R. S. ..... Concord

*Deceased.

HONORARY MEMBERS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

*L. McL. Tiffany ..... Baltimore, Md.
W. W. Keen ..... Philadelphia, Pa.
J. Allison Hodges ..... Richmond, Va.
*R. L. Payne ..... Norfolk, Va.
*J. N. McCormack ..... Bowling Green, Ky.
R. L. Payne, Jr. ..... Norfolk, Va.
J. L. Ludlow, C. E. ..... Winston-Salem
Paul V. Anderson ..... Richmond, Va.
Stuart McGuire ..... Richmond, Va.
William J. Mayo ..... Rochester, Minn.
William Seaman Bainbridge ..... New York, N. Y.
William Sharp ..... New York, N. Y.

OFFICERS, 1921-1922

President.....Dr. Hubert A. Royster, Raleigh
First Vice-President.....Dr. W. T. Parrott, Kinston
Second Vice-President.....Dr. B. C. Nalle, Charlotte
Third Vice-President.....Dr. J. R. McCracken, Waynesville
Secretary-Treasurer.....Dr. L. B. McBrayer, Sanatorium

OFFICERS, 1922-1923

President.....Dr. John Wesley Long, Greensboro
First Vice-President.....Dr. F. M. Hanes, Winston-Salem
Second Vice-President.....Dr. T. C. Johnson, Lumberton
Third Vice-President.....Dr. B. L. Long, Hamilton
Secretary-Treasurer.....Dr. L. B. McBrayer, Sanatorium

COUNCILORS, 1922-1925

First District—Dr. H. D. Walker.....Elizabeth City
Second District—Dr. J. C. Rodman.....Washington
Third District—Dr. E. S. Bulluck.....Wilmington
Fourth District—Dr. K. C. Moore.....Wilson
Fifth District—Dr. A. McNiel Blair.....Southern Pines
Sixth District—Dr. J. M. Templeton.....Cary
Seventh District—Dr. B. J. Witherspoon.....Charlotte
Eighth District—Dr. W. F. Cole.....Greensboro
Ninth District—Dr. C. M. Van Poole.....Salisbury
Tenth District—Dr. Eugene B. Glenn.....Asheville

CHAIRMEN OF SECTIONS, 1923

Public Health and Education—
Dr. W. M. Jones, Greensboro

Surgery—
Dr. J. W. Gibbon, Charlotte

Eye, Ear, Nose and Throat—
Dr. J. B. Greene, Asheville

Gynecology and Obstetrics—
Dr. Ivan M. Proctor, Raleigh

Pediatrics—
Dr. John R. Ashe, Charlotte

Practice of Medicine—
Dr. J. V. McGougan, Fayetteville

Chemistry, Materia Medica, and Therapeutics—
Dr. Ben H. Hackney, Lucama

Chairman Committee on Obituaries—
Dr. Chas. O'H. Laughinghouse, Greenville

Chairman Committee on Arrangements—
Dr. Eugene B. Glenn, Asheville

PLACE OF MEETING, 1923
Asheville, April 17-18-19

COMMITTEES AND REPORTS

Report of Secretary-Treasurer.
Report of Finance Committee.
Report of Committee on Publication.
Report of Committee on Scientific Work.
Report of Committee on Public Policy and Legislation.
Report of Committee on Single Examining Board.
Report of Committee on Public Health Administration.
Report of Committee to Confer with North Carolina Teachers' Assembly.
Report of Committee on the President's Address.
Report of Board of Councilors.
Report of Committee on The Menace of Drug Addiction.
Report of Nominating Committee.
Report of Committee to Confer with State Board of Health in Regard to Tonsil Clinics (Committee appointed by Section Eye, Ear, Nose and Throat).
Report of Committee on Relation with State Board of Health (Committee appointed by Section Eye, Ear, Nose and Throat).
Report of Committee on X-Ray Therapy (Committee appointed by Section Eye, Ear, Nose and Throat).

RESUME OF PROGRAM

OF THE

MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

TUESDAY, APRIL 25

9:00 a. m.—Opening Exercises (Convention Hall).
11:00 a. m.—Section on Surgery (Convention Hall).
11:00 a. m.—Section on Eye, Ear, Nose and Throat (Committee Room).
11:00 a. m.—Section on Chemistry, Materia Medica and Therapeutics (Orangerie Room).
2:30 p. m.—Section on Surgery (Continuing—Convention Hall).
2:30 p. m.—Meeting of House of Delegates (Orangerie Room).
6:30 p. m.—8.00 p. m.—Dinner by Association of County Secretaries (Orangerie Room).
8:00 p. m.—General Session (Convention Hall).

WEDNESDAY, APRIL 26

9:00 a. m.—Section on Surgery (Continuing—Convention Hall).
9:00 a. m.—Sections on Practice of Medicine and Pediatrics (Joint Session—Orangerie Room).
9:00 a. m.—Section on Gynecology and Obstetrics (Committee Room).
12:00 m.—Conjoint Session of the Medical Society of the State of North Carolina and the North Carolina State Board of Health.
3:00 p. m.—Sections on Practice of Medicine and Pediatrics (Continuing—Orangerie Room).
3:00 p. m.—Section on Gynecology and Obstetrics (Continuing—Committee Room).
3:00 p. m.—Meeting of House of Delegates (Convention Hall).
8:00 p. m.—General Session (Convention Hall).

THURSDAY, APRIL 27

9:00 a. m.—Sections on Practice of Medicine and Pediatrics (Continuing—Orangerie Room).
9:00 a. m.—Section on Public Health and Education (Convention Hall).
12:00 m.—General Session (Convention Hall).

PROGRAM
GENERAL SESSIONS

TUESDAY, APRIL 25, 9:30 A. M.

OPENING EXERCISES—CONVENTION HALL, ROBERT E. LEE HOTEL

Call to Order:

Dr. S. D. Craig, Chairman of the Committee on Arrangements, Winston-Salem.

Invocation:

Dr. J. Kenneth Pfohl, Winston-Salem.

Welcome to the City of Winston-Salem:

Hon. James G. Hanes, Mayor, Winston-Salem.

Welcome to Forsyth County:

Hon. Henry R. Dwire, Editor of the Twin City Sentinel, Winston-Salem.

Welcome from Forsyth County Medical Society:

Dr. W. L. Grimes, President, Winston-Salem.

Response:

Dr. J. Vance McGougan, Fayetteville.

President's Address:

Dr. H. A. Royster, Raleigh.

TUESDAY, APRIL 25, 2:30 P. M.

ORANGERIE ROOM

Meeting of the House of Delegates.

TUESDAY, APRIL 25, 6:30 TO 8:00 P. M.

ORANGERIE ROOM

ANNUAL SESSION, ASSOCIATION OF COUNTY SECRETARIES

Dr. Moir S. Martin, President, Mt. Airy.

Dr. L. B. McBrayer, Secretary, Sanatorium.

Dr. H. A. Royster, President of the Medical Society of the State of North Carolina, Raleigh.

Dinner complimentary to Dr. Frank Billings, Resident Trustee of the American Medical Association, Chicago. All officers of the Medical Society of the State of North Carolina requested to attend. Plates laid for one hundred ($1.50 per plate—Dutch treat).

The Presidents Say—Dr. Moir S. Martin, Mt. Airy; Dr. H. A. Royster, Raleigh; Dr. R. B. Butt (Mitchell County), Bakersville; Dr. L. E. McDaniel (Northampton County), Lasker; Dr. A. F. Toole (Buncombe County), Asheville; Dr. D. A. Dees (Pamlico County), Bayboro.

Address by Dr. Billings—The County Medical Society—Long May She Live and Grow!—The Foundation Stone of Organized Medicine.

Election of Officers.

Adjournment.

TUESDAY, APRIL 25, 8:00 P. M.

CONVENTION HALL

A Health Play—"The Jewels of Cornelia," by a group of Modern Health Crusaders, Winston-Salem Schools.

The Problem of a Clinical Medical School in North Carolina—Dr. I. H. Manning, Chapel Hill.

Report of Obituary Committee—Dr. J. T. J. Battle, Chairman, Greensboro; Dr. Arch Cheatham, Durham; Dr. H. H. Briggs, Asheville.

WEDNESDAY, APRIL 26, 12 M.

CONVENTION HALL

Conjoint session of the Medical Society of the State of North Carolina and the North Carolina State Board of Health (Dr. J. Howell Way, President of the State Board of Health, presiding).

MEMBERS OF THE STATE BOARD OF HEALTH

Dr. J. Howell Way, President, Waynesville
Dr. Richard H. Lewis, Raleigh.
Dr. Thomas E. Anderson, Statesville.
Dr. F. R. Harris, Henderson.
Dr. Chas. O'H. Laughinghouse, Greenville.
Dr. Cyrus Thompson, Jacksonville.
Dr. E. J. Tucker, Roxboro.
Dr. A. J. Crowell, Charlotte.
Mr. Charles E. Waddell, Asheville.

EXECUTIVE STAFF OF THE STATE BOARD OF HEALTH

Secretary-Treasurer—Dr. W. S. Rankin, Raleigh.
Assistant to the Secretary—Mr. R. B. Wilson, Raleigh.
Director Bureau of Medical Inspection of Schools—Dr. G. M. Cooper, Raleigh
Director Bureau of Tuberculosis—Dr. L. B. McBrayer, Sanatorium.
Director Bureau of County Health Work—Dr. K. E. Miller, Raleigh.
Assistant Director Bureau of County Health Work—Dr. E. F. Long, Raleigh.
Assistant Director Bureau of County Health Work—Dr. P. J. Chester, Raleigh.
Director Bureau of Vital Statistics—Dr. F. M. Register, Raleigh.
Director Bureau of Epidemiology—Dr. J. S. Mitchener, Raleigh.
Director Bureau of Engineering and Inspection—Mr. H. E. Miller, Raleigh.
Director State Laboratory of Hygiene—Dr. C. A. Shore, Raleigh.
Bureau of Maternity and Infancy—Dr. K. P. B. Bonner, Director, Raleigh; Miss Rose M. Ehrenfeld, Chief Division of Nursing, Raleigh; Mrs. T. W. Bickett, Chief Division of Education, Raleigh.

ORDER OF BUSINESS

Report of work accomplished and recommendations.
Discussions.
New Business.
Adjournment.

WEDNESDAY, APRIL 26, 3:00 P. M.

CONVENTION HALL

Meeting of the House of Delegates.

WEDNESDAY, APRIL 26, 8:00 P. M.

CONVENTION HALL

Some of the Problems of Internal Secretions—Dr. Thomas McCrae, Philadelphia.

The Policies of the American Medical Association, Past, Present and Future —Dr. Frank Billings, Resident Trustee, American Medical Association, Chicago.

Hyperthyroidism and Its Treatment in the Light of Our Newer Knowledge—Dr. Le Grand Guerry, Columbia, S. C.

THURSDAY, APRIL 27, 12 M.

CONVENTION HALL

Report of House of Delegates.
Installation of Officers.
Resolutions.
Adjournment.

SECTION MEETINGS

TUESDAY, APRIL 25, 11:00 A. M.

CONVENTION HALL

Section on Surgery

Dr. T. M. Green, Chairman, Wilmington.

1. Chairman's Address: Traumatic Asphyxia—Dr. T. M. Green, Wilmington.
2. Reconstruction Surgery (Lantern Slides and Moving Pictures)—Dr. Fred H. Albee, New York City.
3. Post Operative Thrombosis of the Messenterie Vessels—Dr. J. W. Tankersley, Greensboro.
4. The Importance of Early Surgical Removal of Immovable Stones in the Ureter—Dr. R. L. Pittman, Fayetteville.
5. Appendicitis in Children—Dr. B. C. Willis, Rocky Mount.
6. Pseudo-Appendicitis Surgically Considered—Drs. J. F. and J. DaCosta Highsmith, Fayetteville.
7. Drainage in Appendicitis—Dr. Henry Norris, Rutherfordton.
8. The Use of Fascia for the Support of Flaps and to Relieve the Tension on Line of Suture in Operation for Cleft Palate (Lantern Slides)—Dr. Addison Brenizer, Charlotte.
9. Modified Young's Perineal Prostatectomy with Report of Cases—Drs. A. J. Crowell and Raymond Thompson, Charlotte.
10. Some Principles Underlying Surgery of the Kidney—Dr. T. M. West, Fayetteville.
11. Polycystic Kidneys—Dr. R. H. Crawford, Rutherfordton.
12. Tumors Involving the Mammary Gland—Dr. Numa D. Bitting, Durham.
13. Early Diagnosis of Tumors of the Breast—Dr. J. W. Gibbon, Charlotte.
14. The Necessity for the Determination of the Origin of Jaundice Before Surgical Treatment—Drs. D. W. and E. S. Bulluck and R. H. Davis, Wilmington.
15. Abolition of Venereal Diseases—Dr. George Walker, Baltimore.
16. Report of Case of Acute Osteomyelitis of the Ischium—Dr. A. de Talma Valk, Winston-Salem.
17. Further Observation of Heart Massage as a Final Resort for Resuscitating Heart Failing Under General Anesthesia—Dr. T. C. Bost, Charlotte.
18. Diagnosis and Management of Fractures of the Skull—Dr. Ben J. Lawrence, Raleigh.
19. Some Surgical Problems in Reclaiming Cripples (Lantern Slides and Moving Pictures)—Dr. O. L. Miller, Gastonia.
20. Preventative and Prophylactic Practice of Orthopedic Surgery—Dr. Alonzo Myers, Charlotte.
21. Diagnosis and Treatment of Epithelioma (Lantern Slides)—Dr. Joseph A. Elliott, Charlotte.
22. Election of Officers.

TUESDAY, APRIL 25, 11:00 A. M.

COMMITTEE ROOM

Section on Eye, Ear, Nose and Throat

(Program to be completed at the close of this session)

Dr. J. M. Parrott, President, Kinston.
Dr. Henry L. Sloan, Secretary, Charlotte.

1. The Management of Strabismus—Dr. V. M. Hicks, Raleigh.
2. Some Observations on Laryngeal Tuberculosis—Dr. Joseph B. Greene, Asheville.
3. How Should the Prescription for Lenses for the Correction of the Refractive Error be Modified by an Associated Muscle Imbalance?—Dr. H. H. Briggs, Asheville.
4. Significance of Nasal Polypi (Lantern Slides)—Dr. H. C. Shirley, Charlotte.
5. Report of Difficult Cases of Bronchoscopy and Esophagoscopy—Some General Observations of X-ray Plates (Lantern Slides)—Dr. C. N. Peeler, Charlotte; Dr. C. C. Phillips, Charlotte.
6. Election of Officers.

TUESDAY, APRIL 25, 11:00 A. M.

ORANGERIE ROOM

Section on Chemistry, Materia Medica and Therapeutics

(Program to be completed at the close of this session)

Dr. E. J. Wood, Chairman, Wilmington.

1. Chairman's Address: The Question of Latency in Malaria—Dr. E. J. Wood, Wilmington.
2. Methods of Procedure and Results Obtained in a Malaria Survey to Determine the Prevalence and Severity of Malaria in Lenoir County—Dr. H. A. Taylor, Bayboro.
3. On the Nature and Treatment of Hemorrhagic Fever—Dr. Cyrus Thompson, Jacksonville.
4. The Practical Management of Hemorrhagic Fever—Dr. L. D. Bryan, Sneads Ferry.
5. Synthetic Drugs: Uses and Abuses—Professor E. V. Howell, Chapel Hill.
6. Election of Officers.

TUESDAY, APRIL 25, 2:30 P. M.

CONVENTION HALL

Section on Surgery

(Continuing)

WEDNESDAY, APRIL 26, 9:00 A. M.

CONVENTION HALL

Section on Surgery
(Continuing)

(This program must be completed by twelve o'clock to give way to the Conjoint Session of the Medical Society of the State of North Carolina and the State Board of Health.)

WEDNESDAY, APRIL 26, 9:00 A. M.

ORANGERIE ROOM

JOINT SESSION
Section on Practice of Medicine

Dr. W. A. Bradsher, Chairman, Roxboro.

Section on Pediatrics

Dr. H. H. Harrison, Chairman, Asheville.

(This section must recess at 12 M. for conjoint session of the State Board of Health and Medical Society of the State of North Carolina.)

1. Chairman's Address: Some Minor Obligations of the General Practitioner—Dr. W. A. Bradsher, Roxboro.
2. Chairman's Address: Why the Pediatrist—Dr. H. H. Harrison, Asheville.
3. Chronic Intestinal Indigestion During the Second and Third Years—Dr. Lewis Webb Hill, Boston.
4. X-ray Study of Tuberculous Lungs—Drs. Thompson Frazer and J. D. MacRae, Asheville.
5. The Value and Limitations of Roentgenology in the Diagnosis and Prognosis of Pulmonary Tuberculosis—Dr. P. P. McCain, Sanatorium.
6. Vaccine Treatment of Secondary Infection in Pulmonary Tuberculosis—Dr. C. H. Cocke, Asheville.
7. Tuberculosis—Advantages of Employing Surgical Principles in its Treatment—Dr. M. Eugene Street, Glendon.
8. Report of an Unusual Case of Appendicitis in a Child—Dr. K. C. Moore, Wilson.
9. The Appendicular Liver and Kidney—Dr. L. H. Swindell, Washington.
10. The Establishment of Baby Clinics and a Report of the First Year's Work in Durham—Dr. B. U. Brooks, Durham.
11. Disorders of the Heart Mechanism—Dr. J. P. Munroe, Charlotte.
12. Diagnosis in Non-Valvular Cardiac Disorders—Drs. William Allan and R. F. Leinbach, Charlotte.

13. The Relation of Age to Disease in Childhood—Dr. Wingate Johnson, Winston-Salem.
14. The Care of the Sick Child's Alimentary Tract—Dr. L. W. Elias, Asheville.
15. Obstinate Eczema in Infancy and Asthma in Later Childhood—Dr. C. P. Mangum, Kinston.
16. The Significance of Stainable Lipoid Material in Kidney Cells (Lantern Slides)—Dr. Wm. deB. MacNider, Chapel Hill.
17. Effects of Pyelography Solutions on Renal Function—Drs. L. C. Todd and Raymond Thompson, Charlotte.
18. Precocious Menstruation and Maturity with Report of a Case—Dr. G. H. Macon, Warrenton.
19. The Milk Regimen in Intestinal Intoxication—Dr. W. T. Rainey, Fayetteville.
20. Hypertrophic Pyloric Stenosis with Report of a Case—Dr. L. J. Butler, Winston-Salem.
21. The Endocrine Glands; Their Relation to Morality and the Psycopathies—Dr. R. McBrayer, Sanatorium.
22. Infant Feeding by the General Practitioner—Dr. J. L. Hanes, Pine Hall.
23. Combatting Summer Diarrhea with Lactic-Acid Milk—Mr. Roy S. Dearstyne, Raleigh.
24. Results of the Diagnostic Study of 1,000 Cases—Dr. A. A. Barron, Charlotte.
25. Value and Possibilities of Breast Feeding—Dr. Yates Faison, Charlotte.
26. Non-Surgical Biliary Drainage—Dr. D. Heath Nesbit, Charlotte.
27. Some Things That May or May Not Interest You as a Medical Man—Dr. H. D. Stewart, Monroe.
28. Election of Officers.

WEDNESDAY, APRIL 26, 9:00 A. M.

COMMITTEE ROOM

Section on Gynecology and Obstetrics

Dr. Oren Moore, Chairman, Charlotte.

(This section must recess at 12 M. for conjoint session of State Board of Health and Medical Society of State of North Carolina.)

1. Chairman's Address: An Analysis of Presenting Symptoms in Pelvic Disease—Drs. Oren Moore and C. M. Strong, Charlotte.
2. The Methods and Advantages of Making Labor Easy—Dr. Ivan Proctor, Raleigh.
3. Acute Appendicitis, Acute Pyelitis, Acute Salpingitis, Differential Diagnosis—Dr. Frank Worthington, Charlotte.
4. Pelvic Psychoses—Dr. DeWitt Kluttz, Washington.
5. Tubercular Endometritis—Dr. Brody C. Nalle, Charlotte.
6. The Cystic Ovary—Dr. P. R. McFayden, Concord.
7. Election of Officers.

WEDNESDAY, APRIL 26, 3:00 P. M.

ORANGERIE ROOM

Sections on Practice of Medicine and Pediatrics

(Continuing)

WEDNESDAY, APRIL 26, 3:00 P. M.

COMMITTEE ROOM

Section on Gynecology and Obstetrics

(Continuing)

(Program to be completed at the close of this session.)

THURSDAY, APRIL 27, 9:00 A. M.

ORANGERIE ROOM

Sections on Practice of Medicine and Pediatrics

(Continuing)

(Program to be completed at the close of this session.)

THURSDAY, APRIL 27, 9:00 A. M.

CONVENTION HALL

Section on Public Health and Education

(Program to be completed at the close of this session.)

1. Chairman's Address—Dr. N. B. Adams, Murphy.
2. Relation of General Practitioner to Tuberculosis—Dr. Chas. O'H. Laughinghouse, Greenville.
3. Relation of General Practitioner to Venereal Diseases—Dr. Jas. A. Keiger, Greensboro.
4. Relation of the County Medical Society to Venereal Disease Control—Dr. J. M. Covington, Wadesboro.
5. Relation of the County Medical Society to Local Health Work—Dr. J. T. J. Battle, Greensboro.
6. Value and Possibilities of Popularizing the Use of Toxin Anti-Toxin—Dr. Geo. W. Newby, Hertford.
7. Health Play: "The Jewels of Cornelia"—By a Group of Modern Health Crusaders, Winston-Salem Schools (see General Sessions, Tuesday evening).
8. The Public Health Nursing of the Red Cross from an Educational Standpoint—Miss Jane Van DeVrede, Director, Public Health Nursing, Southern Division, A. R. C., Atlanta.
9. Progress of Child Hygiene Work in the United States—Miss Rose M. Ehrenfeld, R. N., Chief Division of Public Health Nursing, Bureau of Maternity and Infancy, Raleigh.
10. Election of Officers.

TRANSACTIONS

OF THE

SIXTY-NINTH ANNUAL SESSION OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

OPENING EXERCISES

TUESDAY MORNING, APRIL 25, 1922

DR. S. D. CRAIG, Winston-Salem:

Being Chairman of the Committee on Arrangements, I have the honor to call to order the 69th Annual Session of the Medical Society of the State of North Carolina.

This meeting will be opened with a prayer by Dr. J. K. Pfohl, Pastor of the Home Moravian Church of this city.

INVOCATION

DR. J. K. PFOHL, Winston-Salem:

Almighty God, our Heavenly Father, it is our privilege to acknowledge Thee in all our ways; for in Thee we live and move and have our being. We ask that Thou wilt accept from us this morning our grateful thanks for Thy mercy and Thy grace. Thou art the giver of every good gift, and from Thee we have the blessings of life and health and the opportunity of service.

We pray that Thou wilt give Thy gracious favor and blessing to this Convention, its officers and its members. May all its proceedings and deliberations be blessed to the good of those present, and may there come some further insight into the great secrets of disease and their remedy.

We acknowledge Thee as the origin and creator of life, the first cause of all things, and we know that Thou hast in Thy keeping all the great secrets which we seek to possess.

It has pleased Thee within the past years to give wonderful light upon the problems of sickness and health, and Thou hast enabled these men, in their various positions throughout our State, to bring about wonderful cures and healings, so that we are becoming a more healthful people than we have ever been before. For these things, Father, we thank Thee, and humbly ask that wherever there is darkness still Thou wilt give light. May distress and sickness be further removed from our midst and may we, as a people, come to enjoy full vigor of mind and body.

Give us great respect for Thy laws, both physical and moral, and help us to know that every violation of them brings its own punishment and distress.

We ask that the fellowship of this Convention may be helpful and uplifting, and that these men, as they go back to their homes, may have a higher conception of their great calling and see in it an opportunity to glorify God and to serve their fellow men. Inspire them with a vision of their opportunity for working hand in hand with Him whom we love to call the Great Physician, and may they be laborers together with God in their service.

Again we ask that Thy favor and blessing may rest upon them.

In the name of Jesus, Amen.

DR. CRAIG, Chairman:

In the absence of the Mayor of our city, we have asked Dr. P. E. Horton, Mayor *pro tem.*, to welcome you to our city.

DR. P. E. HORTON, Winston-Salem:

I am sorry that you are doomed to disappointment in the beginning of your meeting, in that our worthy Mayor found it impossible to return to the city to give you an official welcome. I do not mind, as a rule, being mayor *pro tem.* and proceeding in the council chamber or in the office or on the streets, as may be. But this is the first time I have ever been called upon to welcome any organization, and I must say that I do not fancy it. However, in the name of the city I welcome you, and I hope that you are going to have a good time. Our Mayor expected to be here, but found it impossible at the last minute and wired me from New York. So he asked me to say that fortunately he has left all the doors wide open, and you can come and go as you choose, and there is no danger of your being locked up. Therefore I can not tender the keys of the city to you.

I want to congratulate the Medical Society of the State upon the great progress made in the last ten years. The progress has been marvelous, both in a preventative way and in a curative way. I remember distinctly one summer when I was in the mountains recuperating. It was away back in the mountains, where there were about two physicians to one county. One physician had died, and a young man, who as a boy had been playing around his office, had imbibed a smattering of medicine and at that time was practicing about forty miles from any railroad, without any objection from any physician in the county, simply because they could not attend to all the practice. Therefore he was called in quite frequently in his neighborhood. A lady from down the country had gone up there to recuperate, and had developed a case of pneumonia, or, as he called it, "numony." Finally he went down to the county seat to consult a regular physician, who had told him before that he might use his library when he ran against a snag of that kind. He went in and said, "Dr. ———, I have a patient up there with 'numony'. She is pretty sick and I am afraid she is going to die. I wish you would tell me what to do." The Doctor said, "Well, I am pretty busy, and I cannot tell you, but you take that book up there and look it up, and you will see the treatment." He looked and looked, and finally said he could not find it.

The physician said, "Why, here it is." Well, the next day, when some one asked him how his patient was, he replied, "I'm afraid she is worse. She had the 'numony' before, but now she's got the 'p-numony'."

The gentleman referred to, of course, had never seen the examining board of the State, and today he would be indicted and incarcerated in some jail if he tried to perpetrate anything of that kind on the public.

I consider this the greatest and noblest profession in which anyone can possibly be engaged, with the possible exception of the ministry. That is greater because it deals with time and eternity, and the physician deals only with time.

I want you, while you are here, to go to see our factories. You will find this, of course, the greatest tobacco manufacturing center of this country. We have also some great knitting mills. Another interesting fact is that we have under construction two great hospitals, of which Dr. Grimes will tell you, I expect. We are just in the beginning, but if you will come back to Winston-Salem two years hence you will find the greatest hospital system in the country, and one of the best school systems. If you will come back in two years you will be able to note our growth—for we have just begun to grow.

Dr. Craig, Chairman:

Winston-Salem not only extends a welcome to the doctors of the North Carolina Medical Society, but Forsyth County wishes to extend to you a word of welcome. This will be spoken by the editor of the best evening paper in North Carolina. I present Mr. Henry R. Dwire, editor Twin City Sentinel.

Mr. H. R. Dwire, Winston-Salem:

I never could quite see the necessity of welcoming addresses, particularly in the case of a body every member of which knows in advance how welcome he is, except that this annual nuisance is perpetrated upon visitors to a city in order to give aspiring amateur orators an occasion to show themselves. Of course, sometimes some of us regular orators slip in, too. If I could extend a welcome at all commensurate with the heartiness of our greeting to you, it would take all day.

You know the State Medical Society met here about forty-five years ago, and that was quite a wonderful meeting, I think. That was before the medical profession had adopted the practice which Irwin Cobb describes, of dividing up the human anatomy and assigning each part to a certain specialist, and penalizing anyone who goes out of his field.

When Dr. Craig asked me to come and welcome you, I rather demurred. I said, "I don't know anything about medicine." "Well, at that," he said, "there will be others there in the same fix." "Well," I said, "I don't know much about doctors." "That is the very reason we want you," he said. So that is the reason I am here.

There is a story of the governor of a certain State who was asked to address the inmates of a prison. He prepared his speech very carefully, but when he got up to speak, he began: "Fellow-citizens." Immediately he realized that that would not do for a beginning, because they were not citizens. So he tried again. "Fellow-convicts," he began, but stopped, for he was not a convict—yet. Then he made a last desperate attempt. "Well," he said, "I am glad to see so many of you here."

We are glad to see you here. We are glad to see so many ladies here. You know, it is getting so that we can not have a complete meeting without the ladies. If a bunch of men get together, it is a stag party, and if the country were just men you know what it would be—stagnation.

I have a wonderful admiration for the man who can put a man on the table and cut him all up and oil him and put him together again. Then I have a great reverence for the antiquity of your profession. I remember back there somewhere in the Bible it says that Asa consulted a physician, and then it says: "And Asa was gathered to his fathers." I was looking for something complimentary to say about the doctors on this occasion, and I came upon these words in a chapter in Mark: "She suffered many things by many physicians." I have never before realized how modern the Bible is.

I have always had an admiration for doctors. We newspaper people, who have to do some real work, envy people who do not have much to do. The doctor rides around in his car, writes a few prescriptions, and goes to bed and sleeps all night. I have actually seen some young physicians who seemed to have nothing to do. I just envy people who don't have much to do.

We are delighted to have you here. We respect the idealism of your profession, although I have actually heard people speak of doctors who went into the profession to make money. For that matter, I have heard of men who went into the newspaper business to make money. The idealism of the medical profession is the thing that always impressed me—the code of ethics of physicians, the code of ethics promulgated away back there by Hippocrates, and one of the finest that has ever been promulgated for any profession or any business. No higher code has ever been promulgated than that, and we rejoice in the chance to honor you, to welcome people who live up to the ideals of such a profession, the ideals set out in such a code of ethics.

Forsyth County welcomes you. But I am not going to say much about the county. We have some splendid physicians in our county. We are making progress along different lines. Just as an instance, corn was selling for fifty cents a bushel just a few years ago, but recently I heard of some Forsyth County corn that sold for $15.00 a gallon.

Again, we are delighted. If there is anything you want, gentlemen, just ask for it—with certain limitations, of course. If there is anything we can do for you, just let your wants be known. We consider it an honor and a privilege to have you in Winston-Salem.

DR. CRAIG, Chairman:

I do not want you to think, ladies and gentlemen, that we have selected the largest man and the smallest man in the county to welcome you to Winston-Salem. This is not the case. Dr. Grimes is really President of the Forsyth County Medical Society. I present Dr. W. L. Grimes, who will extend to you a cordial welcome in behalf of the County Medical Society.

DR. W. L. GRIMES:

Mr. Chairman, Members of the North Carolina Medical Society. Ladies and Gentlemen: After fourteen years the Forsyth County Medical Society again has the honor of entertaining you. We have wanted you before but have had to forego that pleasure until now for a reason that all of you understand quite well. This building makes it possible for all to be taken care of comfortably and also for all of your deliberations to be held on the floor under one roof.

Among you are many who were here in 1908, and also many new members who have come into our noble profession since that time. I miss some faces—those who have passed to their reward—but they are with us in spirit urging us on to greater achievements. Let us make this our greatest meeting and continue each year to strive toward a higher goal.

It is not good for you to come here and devote your whole time to scientific discussion, so we have arranged some entertainment for you, including a dance, and golf and tennis at the Country Club. We want you all to take advantage of these and have a good time while you are here. Enjoy your visit with us with as much pleasure as it gives us to have you as our guests.

DR. CRAIG, Chairman:

The gentleman who will respond to these addresses of welcome is a physician who has done much to uplift the medical profession in North Carolina. He is not only one of the State's leading physicians, but a statesman, and as a member of the North Carolina State Senate he has been most prominent and resourceful. I present Dr. J. Vance McGougan, of Fayetteville.

RESPONSE TO ADDRESSES OF WELCOME

J. V. MCGOUGAN, M. D., Fayetteville:

Mr. President: I deem it a great honor indeed that I have been chosen to express to you today the thanks of this great body, for your most cordial welcome. I am forcefully reminded that the doctors' forum is the sick room where oratory ceases and silence is imperative. I am a representative of that band of tireless workers, in the cause of humanity who do much and say little; men who seldom raise their voice in public, unless it be to impart knowledge or disclose new discoveries in the mysterious, and still uncertain fields of medicine and surgery. It is for this purpose that we are gathered here today. Scattered far and wide over North Carolina, in every city, town and

village of this great State, are men of our calling, who are working day and night to alleviate pain and suffering, and to baffle the Stern Reaper in his greed for human life. These men have devoted their lives to the great cause. They are ceaseless in their efforts. They toil without complaint. Fighting disease, cooling the fevered brow, soothing the suffering, sharing in sympathy the grief and sorrow of the afflicted, oft-times laying down their lives upon the altar of martyrdom, looking for reward only in the beautiful hereafter, when their lips have been hushed and stilled forever, and their hands and brains can do no more in the service of their fellowman. They are the personification and very embodiment of the teaching of faith, hope, and charity. They have faith in the nobleness of their calling. They wear no jewelled crowns, and are tempted and seduced by no ambitions save the one high and lofty purpose of serving mankind in the great struggle against suffering and death. On behalf of their representatives, who have assembled here to discuss scientific subjects, I wish to thank you for the kind and courteous welcome to your historic city. The city of Winston-Salem and the State of North Carolina have helped to make glorious the history of our country. The hospitality of your people is known the world over. I am sure we shall enjoy every moment of our stay, and our visit will ever remain a golden memory during the years awaiting us. I have often wished to visit Winston-Salem because of what I have been told concerning its history. How in the old days of 1776 when all this part of our State was but a vast wilderness, a little band of travelers came down from a distant State, settled here and began to cultivate and develop it. Laboring against ignorance, want and lack of utilities they persevered until they made this section of the State to blossom as the rose and their influence is felt from border to border of this grand old commonwealth of ours. Among this little band called "Moravians" came the teacher, the carpenter, the farmer, the minister, and last but not least came the good old family doctor. He was not the doctor that you see in your cities today, he was far different. No hideously painted and ill smelling motor car awaited his command to speed him over well prepared roads on a mission of pleasure, but on his tired little nag and in garments of their own making we are told in history that he answered every call far and near and carried succor to the unfortunate in his own careful and humble way. It should be an inspiration to us in our work today when we think of this good old man who labored, wept and died unhonored and unsung, here in this place hallowed by memory. He was ever ready to minister to the wails of those who needed his assistance and struggled to lay the foundation of that body whose delegates to this great convention today are met to devise ways and means of carrying our work onward and upward to perfection. I thank you not only individually for your hearty welcome but I am commissioned by the great Medical Fraternity of the State of North Carolina to extend to you their sincere thanks for this kindness and I ask to leave but this one thought, "WE THANK YOU."

Dr. Craig, Chairman:

The next speaker does not need an introduction to a gathering of physicians and surgeons, for he is known to all of you as one of the leading surgeons of the South. I present our President, Dr. Hubert A. Royster.

ADDRESS OF THE PRESIDENT

THE REAL THINGS IN MEDICINE

Hubert A. Royster, A. B., M. D., F. A. C. S., Raleigh

Let us begin at the beginning. The minimum requirements for a career in medicine are a preliminary education, four years in a medical school, and a license to practice. While these requirements are indispensable they are by no means sufficient. Three higher attributes stand out as the real elements of a successful physician, without which all other requirements fall to the ground. This trinity is: brains, culture and character.

Above all we must have brains. Brains are the alpha and omega of the man of medicine. Without them all is sounding brass. You remember the story of the famous artist who had the talent of reproducing wonderful colors on canvas and who, when asked what he mixed his paints with, replied: "With brains, sir." Not long ago when I was on the way to talk to college students on medicine as a profession, the wife of one of the faculty said: "Tell them that the one thing they ought to have is brains." She had made my speech. To begin the study of medicine without two good cerebral hemispheres thickly covered with a deep cortical layer is to invite failure. No encouragement should be extended to those about to enter the profession of medicine to get in or to those already in to continue, unless they are supplied abundantly with grey matter. The misfits in medicine, as well as in other occupations, are due largely to a lack of understanding. There are some in the cornfield who ought to be in medicine; there are some in medicine who ought to be in the cornfield.

And remember that studying medicine bestows no more brains and adds not one cubit to the mental stature. It provides only a few more implements of the mind to be used for good or for ill. I sometimes think that unless the roots be deeply planted in the soil of real learning, the study of any science narrowly pursued, takes away from the natural resources of the mind more than it puts in. In other words, a finely endowed intellect is needed to carry on in the realm of science, to withstand its temptations toward the illogical, to keep clear-headed in the midst of fact and fancy. Such endowment comes not from science itself; it issues permanently from a mind nurtured in the ways of thinking. The handmaiden of brains, essential for the doctor, is common sense, which is simply the ability to put brains to good account. In the words of Holmes, "Science is a first-rate piece of furniture for a man's upper chamber if he has common sense on the ground floor. But if a man hasn't got plenty of good common sense, the more science he has the worse for his patient."

Make no mistake about culture. Culture is refinement, accuracy, poise, resourcefulness; it is not effeminacy, weakness, conventionalism, impracticability. We have been getting too far away from the humanities, from classical education, from academic scholarship, if you please. In the quest of science—and there is no nobler pursuit—we have set up utilitarian courses, called premedical and certainly premeditated, for the purpose of reducing to a minimum all those things which do not bear directly upon the matter in hand and swelling to a maximum those that are concerned in the material things of medicine. In this we have left out the very bed rocks of learning—the capacity to interpret the phenomena and the power to express the findings. If the average trained laboratory worker in our country today has any weakness, it is his inability to convey his ideas, to put down what he has done, to express his results in terms clear and terse. Generally, his work surpasses his words. And it is not the misfortune of the individual, but of the plan which essays to substitute scientific research for sound scholarship; to get the one without the other, when we may have both. It is the common failing of the later generation of medical men that they do not write so lucidly or think so accurately as those just before them. There are of course, numerous and notable exceptions. But the observation is probably correct, and its explanation lies in the small stress placed upon actual scholarship required of one entering the profession of medicine.

We are living in an age the chief sin of which is inaccuracy. We are inaccurate in thought, in speech, in spelling, in writing. We know a great deal; but do we know anything very well? Short cuts and practical preparation are the order of the day. Language, the only medium through which thoughts are given out, has been almost forgotten. Will it be considered very old fashioned if we should suggest that the neglect of the languages, and particularly the banishment of Greek, may be responsible for our loose thinking and our lack of scholarship? The value of Greek for the medical student might be a theme for a discourse in itself. If you should go over the evidence, you would be surprised to find how much medicine owes to the Greek language, what a very large number of our words referring to diseases, operations, and organs are derived from the Greek—fully as many as from Latin. And many of those coming through the Latin were taken originally from Greek. "We suspect, too, that our men of science who are supposed to be opposed to 'so much Greek,' must study that language secretly or they assuredly could not name the tools of their own trade."* The chief advantage of the study of Greek is a training in accuracy, in the expression of nice shades of meaning, the very essence of a cultivated mind engaged in scientific thought. We cannot divorce science and culture; we cannot go on rearing a race of seekers after truth who are not trained thinkers; we cannot fail to perceive that the education of a candidate for a learned profession means for us, as it has meant for all the older nations, a thorough grounding in the ancient and honorable arts and classics before we approached the special study needed for our dignified calling. That way our great fathers trod, who outstripped us with the means at their

*London Saturday Review, August 16, 1913.

disposal; that way lies our hope of elevation, of bringing back the well rounded medical man and adding to him the marvelous scientific attainments of the present age. My thought was expressed by Thomas L. Stedman* in these words: "Some day the pendulum will swing the other way and a new renaissance will once more join culture to knowledge to make the perfect physician."

Detracting not one whit from the appeal for better mental equipment, it appears even more timely to emphasize the greater need for moral qualification in the physician. By this no reference is meant to righteousness or to worlds to come, to religion or denominationalism; but only to the possession of a sound moral sense. The character of a physician is his most priceless property. It is what he stands for and whom he stands with; it is his attitude toward life; it "is what God sees him do in the dark." Truth is the goal; it develops character and character tells in one's work. Too many are entering the medical profession without good working consciences, without a keen appreciation of the difference between right and wrong; too many are coming into an honored and honorable calling with low standards of trade and traffic in their souls; too many get in who are not gentlemen to begin with and cannot be made gentlemen to end with. Today the young physician too frequently feels compelled to ask his associates, "What do I get out of it?" when he might better ask himself, "What am I putting into it?" Greatly to be desired is a stronger effort to train the moral perception of medical students. They must be inspired toward a high-minded estate. In the speech and bearing of graduates of certain medical schools can be recognized just exactly the outlook on life and the regard for our profession held by their teachers. It is an unconscious percolation. The fine sense of intuitive right-thinking and truth-loving can shine both through precept and example. *Morals* cannot be *legislated* into people; but *ideals* can be *educated* into them.

My tribute to science is the greater because of my contention for broader preparation before embarking in its service. I can heartily join with Moses Harvey in saying that "science is teaching man to know and reverence the truth and to believe that only so far as he knows and loves it can he live worthily on earth, and vindicate the dignity of his spirit." Medicine is both a science and an art; it has to do both with knowing and doing. It is not an exact science—more's the credit, for exact sciences are inert and uninteresting. But the one big asset for the medical man is the acquisition of the scientific attitude in his student days. Every physician should remain a student the whole of his natural life. A pitiable sight is the practitioner who was known as a "good student," but who after five years, more or less, has degenerated into a routinist, never reviewing his former knowledge or adding to his original store. Such a man, though perhaps skilled in so-called practical affairs, forgets more and more medicine each year, until finally it is difficult for him to keep up. He begins to decry theory and to extol practice; he thinks only of results

*Preface to Medical Dictionary.

and never of causes; he speaks magnificently of "common sense" and "letting nature take its course," but rarely uses the one or permits the other.

The trouble with this type of individual is that he has never acquired the scientific spirit. He fell short in the early approach and missed the mental hole. The eager student loves learning for its own sake and believes that no knowledge is useless, if it is correlated. He understands that science is organized knowledge. The scientific attitude means that nothing must be accepted unless it is known; that nothing can be known until it is proved; that everything shall be met in the spirit of hesitant belief. This smacks of pessimism and one poet at least has been led to exclaim:

> "O, star-eyed science! Hast thou wandered there,
> To waft us home the message of despair?"

But nothing could be more unjust. It is not despairing to search for the truth. The challenge is, "how much do you know?" and "how can you prove it?" The doubting Thomas has a place here.

What has no place in science is the *post hoc, ergo propter hoc* habit of mind. It is the most dangerous of all doctrines for the medical man. It is the rankest empiricism and furnishes the platform for all quacks and imposters. "Whereas I was blind, now I see" is an insidious appeal to effects in utter disregard of the means—the cry of the charlatan. Montaigne wrote that when a man is sick and gets well, he cannot say whether it was because of the remedies used, the lapse of time, or his grandmother's prayers. It requires a powerful mental effort to get away from the belief that whatever happens after an event is always on account of it; but we must get away from this belief or we shall not retain our clear thinking.

After all it is the acquisition of knowledge which is enticing and inspiring, not merely the possession of it. "If I held truth captive in my hand," says Malebranche, "I would let it fly that I might again pursue and capture it." And it is well to remember that all the new is not scientific, nor all the old empiric. Science teaches us to unlearn many things each day and to relearn as many the next; for there is scarcely anything new except what has been forgotten.

A turn in the affairs of medicine is just before us. Whether that turn will be toward new and untried fields or along some old and well-worn paths, the future—the near future—will determine. The struggle is on between medicine as practiced by the private physician in the time-honored relation and the practice by groups in a collective fashion. No matter what may be the arguments on the one side or on the other, the situation will work itself out precisely in accordance with the desires of the public, the results of methods in use and the attitude of physicians.

Due to the multiplicity of technical detail and the accumulating mass of new discoveries in modern science, it is now more than ever true that no man diagnoseth to himself. It was never true that any one man looking at the patient through the peephole of his slender

specialty could compass a complete diagnosis, or that a cursory inspection in the old way by the ordinary practitioner would round out the survey of the case. But always there has been a demand for the man who could find out everything there was to know about his patient, whether he could himself carry out all the detailed investigations and therapeutic indications or not. The main reason for requiring assistance in the diagnosis of disease is the need for particular apparatus, in the use of which some are skilled, to elucidate findings not brought out by the general physical examination. Thus grew up specialism and thus were developed instruments of precision. But there never has been, and never will be, anything to take the place of cultivated brains and trained special senses. This dual instrument, ready for instant and proper use, will be found as the principal equipment in the office of the real physician. Hear a layman's view:* "The real pest among reputable physicians is the young man who expects his patients to pay for his needlessly high overhead expenses. He may be known by his spacious and elaborate offices and waiting rooms, buttoned door boys, sleek secretaries, fluttering office nurses and powder monkeys of both sexes, and an all pervading shimmer of white enamel, mechanical novelties and glittering metal work. Not infrequently the young practitioner who indulges in all these fripperies is trying to put over a poor piece by costly stage effects. He sometimes forgets, and his patients still oftener fail to realize, that what he really has for sale resides in his own cranium, and that mere style, atmosphere and scenery are poor substitutes for knowledge, experience and technical proficiency." Unguided by intellect, instruments of precision become instruments of confusion, for they are not infallible and are woefully subject to the human equation. Rightly used and rigidly interpreted they mean much in proving a diagnosis; regarded as the only means in arriving at conclusions or depended upon as unfailing agents, they are but disappointments. Great pity should be felt for the inexperienced beginner who expects his microscope, his hemocytometer, his cystoscope, his chemical reagents and his metabolimeter to solve all the mysteries of diagnosis and to spell accurately the name of the disease. If I should see any such, I would say: "Let us first take a look at the patient; use our minds in obtaining his story; perform a laying-on of hands; after which we will ask for the aid of scientific apparatus which may either confirm or reject our observations. And if the laboratory findings do not agree with the clinical signs, then so much the worse for the laboratory."

And what will become of our specialism? Where will it end? Will there be need for its regulation and control? Undoubtedly the existence of specialties is the proof of their necessity and their development has been the crowning achievement of modern medicine. But increasing subdivisions of specialism give us pause, so much so that by reaction we are beholding a newer specialist—the general practitioner. He is in a class by himself, left in charge of those who are actually sick, with the issues of life and death on his hands, both early and late. He is the keystone of the medical arch; without his support

*Saturday Evening Post.

the whole fabric would fall; family after family are depending on him for counsel, relying on his judgment in every crisis. Of what use are specialists unless there is the intermediary to say when they are needed? And since the general practitioner is by distinction become a specialist and expected to know a little about everything, why should not the professed specialist be required to know something of general medicine? One finds oneself somewhat in agreement with the recently suggested proposal that examining boards may require five years in general practice before allowing the privilege of going into a specialty. How else may be curbed the tendency to divide the body into compartments for seclusive attention without a working knowledge of the whole system? These questions also will furnish their own answers.

Many are rushing into group medicine as a solution of the whole matter. Such practice brings to bear upon each case the combined study of a number of specialists, who, examining the patient individually, finally come together for establishing a complete diagnosis or leave it to one member of the group to pronounce the judgment. Work in groups has come to stay; for it is inevitable that men will associate for mutual help and encouragement. Team work is the modern slogan and it is the way to win the game. But if the group discounts the individual and the individual forgets the patient, we have, not group medicine, but gang medicine and their product is syndicated science, than which nothing could be more unscientific. One very notable group clinic and several others of lesser fame and more recent date have served to popularize the combined method of practice, and diagnostic groups are springing up all over the land. There are some with only two men in them (reminding us of the close corporations in which one partner is the President and Treasurer and the other Vice-President and Secretary) and others containing scores of men; there is the peripatetic clinic, in which taxicab fare is a considerable item; there are those conducted under one roof either of a separate institution or on one floor in an office building; there is the community hospital with its broad choice of consultants and naturally a subgrouping among these. While there is much to be said in favor of any form of associated effort, certain fallacies and dangers lurk in group practice. Primarily it is well to recall that "a chain is no stronger than its weakest link" and unless the men on the team are of equal capacity in their several branches, the resultant report will be one-sided. There is danger, too, of everybody's business being nobody's business, so that the diagnosis produced may be a compound of the average forces of a factory, ground out piece-meal. An impersonal mark is likely to attach to all such methods, to rob the process of any human touch and to afford the greater chance of error, especially if the interpreter for the group sees the patient only for a short sitting on the last day of the ordeal. Of necessity the head of an important group is compelled to be a genius in his sphere and all groups which have succeeded scientifically have had such heads.

Free and frequent discussion has waged over the group question and its allied problems. My feeling is that the group idea is one of the most useful modes of service in medicine. But no group should

be iron clad or unwieldly; its tendency to send out machine-made work should be changed into that of a handpicked product; it should stop straining at gnats and swallowing camels and learn that the group was made for the patient, not the patient for the group. Just as strongly should we realize that the practice of medicine will never—and should never—get away from the personal relation of patient and physician and that always we shall depend for our health and our happiness upon the daily visits of the doctor from house to house,

> "Battling with custom, prejudice, disease
> As once the son of Zeus with death and hell."

A spirit of uncertainty pervades our rank and file. The existence of a subconscious fear that something or somebody will take away pristine rights, privileges and emoluments cannot be doubted. Neither can it be denied that this fear is natural and justified by appearances. What with welfare boards, full time instructors in health, community service, vital statistics laws, narcotic restrictions, prenatal clinics, and the like, doctors have begun to feel that they are "preached to" overmuch, that they are "regulated" beyond endurance, and that their confines are being invaded. Such expressions are heard in different quarters from time to time. Much as we may sympathize with them, the truth is that the fear which they denote is unfounded. We shall not lose anything, unless we divest ourselves of it; we shall not have anything taken away from us, unless we prove unworthy to keep it; we shall not fail to receive any reward unless we sidestep the labor and the waiting necessary to secure it. The only harm that can come to us is the harm we may do ourselves by sins of omission or of commission. The upsetting questions most of us are asking ourselves are, What are we going to do about it? Where will the encroachments cease? How shall we adjust ourselves to the inevitable conditions?

I will tell you what we are going to do, gentlemen of the medical profession: we are going to change, to progress, we shall go forward, we will meet and master every disturbing difficulty. A stubborn element of conservatism is the rule in this commonwealth. We are too prone to "be not the first by whom the new is tried," and often boast of being "the last to lay the old aside." This is perhaps a virtue; but a virtue run to seed may constitute a vice. Are we not sometimes afraid of the new because it is new? Over and over again it has been asserted that "our people are slow to change," that they will resent any interference with the existing order of things. It is only too true. I was told this when we were planning to make radical changes in our medical examination statutes and in our practice act; I was warned that the whole affair would be thrown overboard if we altered a jot or a tittle of the existing laws. But the changes were made and there was not an objection or a complaint. And the reaction has been beneficial. Once a right thing, even though it be a complete reversal, has been enacted among a conservative people, they quickly assimilate it and support it as if they had always done so. Thus will come our adjustment to the forward movement in medicine —not through compelling agencies or rapid fire orders, but by seeing

that whatever benefits the people of a state, who gave us the commission we hold, also benefits the medical profession, whose highest aims we have at heart and whose noble principles we as individuals are striving to maintain. "One for all and all for one."

My colleagues, the privilege you have given me of being your leader during the past twelve months has brought me a sense of joy tinged with a feeling of responsibility, of satisfaction mixed with conscious unworthiness. You have honored me beyond my merit, but not beyond my appreciation of the signal compliment you paid me or the desire to serve you with my whole heart. I took literally the By-laws of our Society as definitely set out in Chapter 6, Section 1: "He (the President) shall be the real head of the profession of the State during his term of office and as far as possible shall visit by appointment the various sections of the State." To this end I have attended the meetings of societies in each of our ten districts. I have journeyed from Murphy to Elizabeth City, from Wilmington to Elkin. The inspiration I have drawn from these visits, the pleasure I have had from mingling with my fellows, and the delightful reception given me as the spokesman of this great Society, will be sources of grateful remembrance through the remainder of my life. In my talks at these meetings I stressed the need for going back to the strict construction of the Constitution, of enforcing to the letter every rule contained therein, and made certain suggestions "for the good of the order," which I shall presently outline in my message to the House of Delegates. I appealed to the fellows of the various component societies to keep in mind the county as the unit of organization and to remember that, for our common interest, attendance is the keynote and cooperation the watchword; I emphasized the importance of the district societies and approved of plans to conduct their meetings according to a definite program, regarding them as miniature State Societies; I sought to dignify the position of Councilor, to exalt the duties of this officer, representing as he does in his district the power and influence of the parent organization. Finally each member was urged to feel that the whole structure of organized medicine in State and nation hinged upon his own local status, and that we as officers of the Medical Society of the State of North Carolina were his servants chosen to do his bidding. Thus ends my accounting of the trust you placed in my hands.

In conclusion I have an ideal to express for this Society. First, I would have it conform in every particular to the specifications set forth in Article II of the Constitution, adopted in 1903, which stated that "the purposes of this Society shall be to *federate* and bring into one *compact* organization the entire medical profession of the State . . . . . ; with a view to the *extension of medical knowledge* and to the *advancement of medical science;* to the elevation of the standard of *medical education* and to the enactment of just *medical laws;* to the promotion of *friendly intercourse* among physicians, and to the guarding and fostering of their *material interests;* and to the enlightenment and direction of public opinion in regard to the great problems of *state medicine;* so that the profession shall become *more capable and honorable* within itself, and more useful to the public

in the *prevention and cure of disease*, and in prolonging and adding comfort to life." I would have this Society embody these principles in the conscience of its every member, especially recalling the significance of the order in which the principles are presented; I would have it a place where righteousness reigns and no mean thing may live; I would make it a guild and not a trades union; I would keep it a haven where politics doth not enter and where selfish exploitation doth not corrupt; I would wish every one to think of not what the Society is to give *him* but what *he* is to give the Society; I would want it a communion where freedom rules, where each fellow may have the aspiration and the opportunity to develop what is in him; but I would also carry its standard so high that we may draw all men up to it and never for one moment trail its colors in the wretched dust of the unqualified and the unfit.

We have every reason to feel encouraged. My note is one of optimism. If only we may glorify brains as the consummate need; if we reverence culture as a means of grace; if we set character above circumstance, then indeed shall we grow in capacity, refinement and virtue, assuming our rightful stations as devotees of a learned profession and champions of the real things in medicine. We cannot fail, we cannot lag behind, if we serve these purposes. May we not all stamp deep down in our minds and hearts the cheering message of our first president, the immortal Strudwick, who seventy-two years ago, gave voice to these lofty words: "Neither the apathy of friends, the cold neglect and deep injustice of legislation, nor pampered quackery and empiricism can stay its onward course. True medical science will, like the majestic oak, withstand the shock and storm of every opposition. It has been beautifully compared to a star, whose light, though now and then obscured by a passing cloud, will shine on forever and ever in the firmament of Heaven."

Dr. C. A. Julian, Thomasville:

I have had the privilege of attending many meetings, but today I have had the greatest pleasure I have ever experienced in any meeting, and I have listened to a real classic. It should never be referred to a committee and thrown into the waste basket. The committee should place this address in the hands of every county medical society in North Carolina. I hope that I shall have the privilege of being on the committee that will place a printed copy of this address upon each secretary's table.

I believe that our President must be a Rotarian, for he has touched the fundamental principle of Rotary: "He profits most who serves best."

Dr. Frank Billings, Resident Trustee of the American Medical Association, Chicago:

I want to say to you that this address of your President is one of the most instructive, interesting and important to which I have ever listened. I want to make an appeal to him to have it published in the Journal of the American Medical Association, that it may go as a message to the profession of the whole country.

Motion duly seconded and unanimously carried.

ANNOUNCEMENTS

Dr. L. B. McBrayer, Secretary-Treasurer:

I have a few announcements to make, the first of which is that Dr. Monroe, of Sanford, desires to meet all the railroad surgeons.

Dr. M. C. S. Noble and Dr. Manning and others of the University want to confer with all physicians interested in a post-graduate course to be offered by the University of North Carolina this summer.

Please bear in mind that a dinner will be given at six o'clock this evening in the Orangerie Room by the Association of County Secretaries. All officers of county societies and all officers of the State Society, down to the councilors and chairmen of sections, are invited. This dinner is given in honor of Dr. Frank Billings, of Chicago, Resident Trustee of the American Medical Association.

We have a larger number of members in good standing today than at any other meeting in the history of the Medical Society of the State of North Carolina. However, there are still some four hundred who have not paid their dues, and if any of them happen to be here and want to attend to this, they can see Mr. Snow at the registration desk.

We have been trying, for the last two years particularly, to inform Dr. McGougan and others of that age of any lapses in their membership, looking towards the time when they will become honorary fellows. If any of you want to look into that matter, see Mr. Snow.

Miss Huddleston, a very charming lady, is here representing the Southern Medical Association, and any who want to become members of the Southern Medical Association will have an opportunity to do so by seeing her. (Adjourned.)

SCIENTIFIC PAPERS

SECTION ON SURGERY

SECTION ON EYE, EAR, NOSE AND THROAT

SECTION ON CHEMISTRY, MATERIA MEDICA, AND THERAPEUTICS

SECTIONS ON PRACTICE OF MEDICINE AND PEDIATRICS

SECTION ON GYNECOLOGY AND OBSTETRICS

SECTION ON PUBLIC HEALTH AND EDUCATION

SURGERY

THOMAS M. GREEN, M. D., WILMINGTON, CHAIRMAN

TRAUMATIC ASPHYXIA

THOMAS M. GREEN, M. D., F. A. C. S., WILMINGTON

This is perhaps one of the most remarkable conditions we are ever called upon to witness, especially with regard to the appearance of the victim; and yet the pathology is rather simple, most cases recovering in spite of other injuries which accompany it. Indeed, the injuries which accompany it are frequently more severe than the traumatic asphyxia.

This condition is brought about by compression of the chest and abdomen over an extended period of time, causing a suspension of the respiratory function. Judging from literature on the subject it seems a rather rare condition, only a handful of cases having been reported during the past century.

It was described first by Olliver, and later by Tardieu, and then by Hardy, who first observed the condition in victims of panics who were crushed in the efforts of the crowd to leave a building, or a certain point. The reported cases exhibited certain striking, and more or less constant, characteristics—i. e., the appearance of the skin, head, face and neck, differing only in degree. The condition of the skin consists of a dark red to purple discoloration which may be discreet or confluent, covering the face and neck, extending sometimes as far down as the third rib on the chest. On the post surface the discoloration may extend down to a line drawn across the shoulders at the level of the lower border of the trapezius muscles, producing the so-called "double trapezius triangle." Sometime the discoloration is shown on the arms. Subconjunctival hemorrhages are common to all cases, while hemorrhages from the nose, mouth and ears frequently occur. Other common points of occurence are the pleura, pericardium, and abdominal viscera. These latter places are the site of punctate ecchymosis in all types of suffocation. The blood is dark and venous with increased fluidity, due to the exclusion of atmospheric oxygen. Other symptoms frequently accompanying the condition, are unconsciousness, brief or prolonged, respiratory or cardiac depression, pulmonary engorgement associated with rales and bloody expectorations. Convulsions are not uncommon, and occur not only with resumption of consciousness, but during several days following. Despard thinks they cannot be explained by the engorgement of the cerebral vessels, nor to toxemia arising from the asphyxiated state. He believes that they are due to respiratory interference from injury to the phrenic nerve.

We must remember that in this type of asphyxiation we are not only dealing with the withholding of air from the lungs, but that the venous blood in the large veins of the thorax, neck, and head, has been forced backward into the capillaries of the skin by the compression

of the chest and abdomen, thus producing an intense discoloration of the skin. *Perthes* explains the sharp limitation of this discoloration by the lack of competent valves in the veins of the head. (There are no valves in the innominate and internal jugular veins, except a pair where the jugular enters the innominate. These are irregular and incompetent. There are two pairs in the external jugular, one at its junction with the subclavian, and the other just above the clavicle.) Both sets of valves are incompetent. *Huerter* in explaining this discoloration thought that it was due either (1) to the extreme distension and rupture of the vessels of the skin of the face and neck from the sudden upward pressure; or (2) that the pressure on the abdominal and thoracid sympathetic nerves produced vasomotor paralysis, which results in the distension of the vessels with blood. *Perthes* accepts *Huerter's* first explanation, but believes that the capillaries are actually ruptured and allow the blood to be extravasated into the surrounding tissues. *Burrell and Crandon* believe the condition to be due to vasomotor paralysis, accepting the second explanation of *Huerter's*. It remained for *Beach* and *Cobb* to show conclusively in their exhaustive treatise that it was not an extravasation of the blood outside of the vessels, but that the intense pressure from the blow had forced the venous blood upward against the incompetent valves, and backward into the capillaries of the face and neck. This they proved beyond question by removing sections of skin for microscopic slides. The discoloration is inclined to blanch a little on pressure and clear up rapidly without going through the various stages of discoloration as shown where blood is extravasated into the tissues. *The treatment of the condition* consists of the use of stimulants, applications of oxygen and artificial respiration. *Ruppaner* finds that most cases that recover consciousness from the original injury go on to complete recovery. Many show the so-called "contusion pneumonia" about the third day. He finds the prognosis should be guarded as to vision, since optic nerves atrophy and opaque patches of the macula have been reported.

REPORT OF CASE

Case in question is that of a male, 38 years of age, by occupation a pipe fitter, who had previously done some diving in the navy. Subsequently, after an accident at the local yard, he offered to go down in a diving suit and ascertain the damage to one of the vessels. For some reason, while at a depth of 37 feet, his air connection became interfered with for a period of 10 minutes, and when taken out of the diving suit he showed the characteristic appearance of traumatic asphyxia. He was never unconscious; was having small hemorrhages from the mucous membrane of the eyes, nose, mouth and rectum. Respiratory function very shallow and irregular, but improved immediately with artificial respiration and oxygen. His mentality seems to be normal after the accident. His face was swollen and markedly discolored. The discoloration went as low as the third rib in front, and on the back outlined the double triangle formed by the trapezius muscles. This discoloration began at the margin of the hair as a deep red, and gradually merged into a dark purple. It disappeared rapidly, and was practically all gone at the end of the fourth day, except the eyes, which faded very much more slowly. He

was discharged from hospital at the end of the fifth day. There was never any permanent disability as a result of the accident. The pressure on his body through a diving suit at a depth of 37 feet would be about 18½ lbs. to the square inch. The helmet was rigid and prevented this pressure from being exerted on his head and neck, so the forces acting were similar to squeezing of the abdomen and lower thorax for a similar length of time.

Other cases found in literature, and which manifested the skin discoloration and other symptoms in a more or less degree were:

Huerter—two cases—one of his own occurring in a boy of 15 caught in a threshing machine—the other a case of Vogt's of a boy of 15 run over by a wagon.

Perthes—two cases—one of a boy of 14 caught in a cotton mill, being pushed between a wagon and the handles of a cylinder—the other being the case of a man of 36 who was crushed between a wagon and an iron post.

Baum—cites the case of a male of 20 years of age, injured by a stone wall falling and pinning him to the ground.

Burrell and *Crandon*—report a case of a male 22 years of age whose chest was caught between an electric car and a door post for 3 minutes.

Beach and *Cobb*—report an interesting case of a male of 30 years, whose chest was crushed by an elevator for 5 minutes.

Henry—reports a case of a man of 20, crushed between iron pillars, who recovered from the traumatic asphyxia but died from sepsis.

Winslow—cites the case of a man of 22 who was bent against the ceiling in an ascending elevator.

Robertson—describes a case of a child of 13 years caught between the cow catcher of an electric car and the ground.

Rappaner—reports four cases—two of which were women injured in a panic following a fire in a theatre—the other two being men—one crushed between a wall and a great weight, and the other rolled by a tram car.

Beatson—presents a case of a man of 24 years, who was bent down and forward by a pit cage.

Ryerson—describes a case of a boy who was injured by being compressed between the springs and wheels of a wagon.

Bolt—cites the case of a male of 38 years, whose abdomen and thorax were crushed between two cars. This man died the 27th day after the injury.

Ettinger—reports the case of a young man who was tramped on by a mob.

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OCCLUSION OF THE MESENTERIC VESSELS

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I bring this infrequent and rather obscure condition to your attention with the hope that those occasional deaths we have may be made still more infrequent. The problem of the surgeon in this day of perfected technique is to lower our death rate, and I believe it is in these obscure cases we now have to look for our results.

My first experience with this condition was in 1914 and since then I have seen two other cases. All were lost and I believe an early recognition of this condition, one, and possibly two, might have been saved. All three of my cases occurred following operations, but this does not mean the cases are confined to those following operations, many of them occur independently. The question of early recognition is important whether occurring post-operative or independently. Since the first case reported by Tiedman in 1843, and Beckman in 1858, slightly over 400 cases have been collected by various authors. There is no doubt that many cases go unobserved, they are not so infrequent. Watson, at the Boston City Hospital, had his attention brought to this subject and in the next year found 8 cases. In 1600 autopsies at the Johns Hopkins Hospital four cases of thrombosis were found that had given no symptoms. Hesse, Berlin, in 1921 collected 73 cases of thrombosis and embolism of abdominal aorta, these were low down however, toward the bifurcation. Ross before the Amer. Surgical Association, Phila., in 1920, reported 6 cases of mesenteric thrombosis, quoting one of Deaver's. All died but one. Next year in the same town, Reed, at the Polyclinic reported one, Jopson at Presbyterian, three and Despard at Jefferson, one. Confirming what I have said that more cases will be found when we look for them.

I have used the term vascular occlusion advisedly because I am making no effort to distinguish between arterial embolism and thrombosis, neither am I trying to differentiate between arterial and venous occlusion. While this may interest the pathologist I believe clinically the course to be practically the same, certainly the ultimate results are the same unless we recognize the condition and give adequate treatment. It is true several cases of occlusion have been diagnosed and they recovered without operation but these cases were the excep-

tion and likely due to a slowly developing thrombosis in which the collateral circulation developed, and I do not doubt that recognizing the condition aided materially in the treatment and the subsequent recovery. Trotter mentions in his report that in only about 4% of the cases was a diagnosis made. The pathogenesis of the condition is not well understood and several theories have been advanced, with much experimenting. It is true that occlusion practically always occurs in some part of the superior mesenteric, but I cannot see that its origin being higher up on the aorta, or the angle of its origin being less acute can influence this condition. Most likely the distribution to the most active part of the intestines with a possible artero-sclerosis plays a more important role. Otherwise it no more explains the cause than it does in thrombosis of the femoral in appendicitis, typhoid, etc. While an embolus will give a sudden closure should it lodge in a small vessel it is logical to assume that it will be one of the small vessels near the distribution and that collateral circulation to a certain extent at least will delay actual necrosis and cause the symptoms to supervene so gradually that it is impractical to differentiate from a thrombosis, provided it causes any symptoms whatever. Then too a thrombus may not close the lumen completely and will not give positive symptoms until complete interference with the circulation is effected, or it may cause a spasm of the intestines with functional obstruction. It has been shown experimentally that you may have sufficient blood passing through a part to maintain life to that part but it will not functionate. This may account for the symptoms simulating obstruction without finding obstruction at operation. Also occasionally in experiments thrombosis has produced no other pathology in the intestines, as shown also in the post-mortem room. However, it will cause a sudden spasmodic contraction of the intestines, interference with function, and if the ischæmia is continued, death of the part. This contraction may prevent the collateral circulation from adjusting itself, as we know by experiment when blood is cut off from an area the vessels dilate and the blood flows faster in the surrounding area, nature's effort at repair. This prevention of collateral circulation may give rise to the violent spasms, practically the same as in embolus. From these reasonings you may readily see the futility of trying to differentiate between embolus or thrombus, arterial or venous, clinically. This might explain, too, why theoretically the collateral circulation should prove sufficient but practically does not. How often a thrombus or embolus may cause trouble we are unable to say. Frequently too, the area of infarction may be multiple, as appeared in one of our cases. Undoubtedly we must have had a collateral circulation established after the thrombus formed but multiple emboli broke away from this thrombus causing separate infarcts.

Welch and Mall have shown by constricting mesenteric and anastamosing vessels the point where 1/5 of the normal is reached infarction takes place. This brings us again to the pressure exerted by the spasmodic contraction of the intestines, which would decrease the blood in that area, also the aid to lowered blood pressure obtained in decompensation, valvular lesions and the predisposition to embolus or thrombus in artero-sclerosis. I know I have ligated mesenteric vessels in

accident cases far beyond what I considered the ordinary conception of safety in the intestines only to have them make an uneventful recovery. If this interference is not too close to the gut recovery is more apt to occur. Neiderstein's experiments show as much as 3 to 5 c.m. of gut may be separated from its mesenteric attachment and collateral circulation will be ample, but beyond 5 c.m. gangrene will supervene. (In 3 c.m. superficial necrosis will occur and with 5 c.m. necrosis and hemorrhage into the other coats.)

In the symptoms of this condition there is nothing pathognomonic. We find from cases observed that it occurs most frequently in men and during the middle decade of life. Cardiac disease, artero-sclerosis and recent operations are predisposing factors. Of course acute injury is always a factor to be considered. Pain is very severe and colicy-like, first generalized in the abdomen, though it may become local later. If peritonitis sets in may again become general. In my cases nausea and vomiting did not set in till late. When vomiting does occur it is first bile and the contents of the stomach, later may become fæcal. Obstipation is the rule and when bowels are moved by means of an enema frequently small amounts of blood may be found in the stools. This is not indicative but very suggestive of an embolus or thrombus, always bearing in mind that blood may be found in the stools associated with obstruction, intussusceptic tumors, etc. Tenderness of the abdomen, tympany and muscle rigidity is always present and frequently may be localized over the involved area. Distentions gradually develop and occasionally a small mass may be felt in the abdomen. The temperature is no guide, it usually falls at first and then gradually rises as peritonitis develops. This is true also of the leukocyte count, as the peritonitis commences the white count rises. Shock is considerable in these cases and from my observation seems to be greatest with the onset of the pathology.

These are general symptoms only and represent the average case and diagnosis will have to be arrived at mainly by exclusion. Like other abdominal cases you may find these symptoms aggravated or indefinite, especially may this be true where collateral circulation has been effected.

REPORT OF CASES

The first case in 1914, male 34 years old and rather heavy build, was operated on for acute appendicitis. Did not have any trouble for about five days and then suddenly complained of severe pain in the mid-abdomen. Bowels were easily opened and we did not anticipate further trouble. However, that night he became worse, fever began to rise, abdomen slightly distended. On opening incision lower ileum was found to be gangrenous from thrombus in mesentery. Condition precluded extensive operation and he was drained freely with the hope of doing something radical should he improve. Condition gradually grew worse till he died.

The second case was somewhat similar but more rapid in onset and more quickly terminated:

A colored man 47 years old was operated on for suppurative appendicitis, peritonitis general, freely drained. Six days afterwards, while temperature had been normal, and apparently well on the road to recovery, he developed acute pain in the right iliac region, abdomen rapidly began to swell, temperature dropped considerably below normal and he went into profound shock from which he soon died. Examination disclosed intestines in lower ileum to be gangrenous over short area, where previously their color had been good. Did not explore further but from the general appearance and onset of condition we were sure an embolus or thrombus had developed. Then too we were of the opinion that it was due to artero-sclerosis largely that the condition developed as it was well marked. While he gave his age as 47 his appearance indicated that he was around 60. The thrombosis in this case possibly extended from an atheromatous aorta.

The third case was a young lady of 21, operated on in July, 1921, by Dr. Boyles for subacute appendicitis, clean case. Had been suffering with her appendix for one year. She was apparently making a good recovery from her operation till August 6th, nine days after operation, when she started vomiting and became somewhat restless. No rise in temperature and pulse only slightly increased. Next morning had a small bowel movement from enema, developed hiccough, temperature now began to rise and complaining of severe pain in abdomen, generalized but somewhat toward lower abdomen, distended considerably and much muscle rigidity. Bowels moved again that afternoon and she had a fairly good night, no report of blood in the stool. Next A. M. vomiting fæcal in character and it was at this time I saw the case. Thought we had obstruction and advised immediate operation. Operation disclosed several small infarcts in the lower ileum on distal side of gut. Entire area covered about 20 c.m. This was resected and end to end anastamosis done. Patient was in profound shock and died about 12 hours later. This was undoubtedly multiple infarcts developed from a thrombus in the superior mesentery.

TREATMENT

The question of palliative or operative treatment requires the most careful consideration. The mortality rate seems to be almost as high in one as in the other, but I believe with early diagnosis of the condition we will offer our best chances to the patient by surgical interference. I believe where the symptoms come on gradually and do not become violent there is a chance of recovery by complete rest to the intestines, supportive measures, saline, glucose and opiates, with hot applications to the abdomen. On the continent where they seem to have given this subject more attention the Germans advocate duiretin. Just how this does good I do not know and have had no experience with it. Jaschke of Berlin, says it is important to give digitalis before operation, especially if there is doubt of the heart's action. In his experience getting patients up early in any operation has reduced thrombosis 1/2 and emboli 1/3.

Should an infarct occur I believe there is only one treatment, excision of the area. This operation was first performed by Elliott in 1895 and reported in the Annals of Surgery. Since then many have been successfully operated. Should the onset and symptoms be mild

I would advocate watchful waiting, and should the symptoms be very acute or rapid in onset I think quick interference is the choice. Even then the extent of involvement would indicate the possible chances of recovery, bearing always in mind the great amount of shock to patients in this condition as in obstruction.

SUMMARY

1. That the pathology is most often a thrombosis in some part of the superior mesenteric vessels and that the mucosa of the intestines suffers first and most. This gives the blood in the stools.
2. Occasionally an embolus or thrombus may cause no symptoms or if symptoms do occur they may clear up, due to the establishment of collateral circulation. This is accounted for possibly by the slow closure of the vessel. The premanency of the collateral circulation is to be doubted as cases have been reported where it broke down subsequently and caused infarction with death.
3. Intestinal obstruction may occur without infarction, as the blood supply to the parts may be sufficient for nourishment but not for function.
4. Should infarction occur, as shown by degree and progress of the symptoms, operation, with excision of the infarcted segment, offers the only solution.

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Many others that seem to be only a repetition.

THE IMPORTANCE OF EARLY SURGICAL REMOVAL OF IMMOVABLE STONES IN THE URETER

R. L. Pittman, M. D., Fayetteville

You will notice from the title of this paper that it is not the writer's desire to enter into the general discussion of the various forms and methods of treatment of ureteral calculi. The treatment of ureteral calculi is both immediate and remote. The immediate treatment of course is concerned only in the relief of the pain associated with colic. This I am sure you are all familiar with, which consists principally of the administration of large doses of morphine and atropine, hot baths, turpentine, and absolute rest. The remote treatment is concerned in the after study of the stone and its relation to the kidney,

that is whether or not the stone is of passable size and is not causing serious injury to the kidney by its persistence, those stones which fail to pass within a reasonable length of time under ordinary treatment, give evidence by their continued presence that more or less serious changes will be produced in the kidney and general condition of the patient. It is this character of stone that I wish to discuss.

During the past ten years a great deal has been accomplished in the non-operative treatment of ureteral calculi by many experienced Urologists. The results have been so encouraging that many Urologists have gone so far as to state that they could now remove all ureteral calculi by this method, which consists principally in passing the ureteral catheter one or more times the installation of local anæsthetic, olive oil, etc. This procedure, however, has not yet become so simple but what it requires a skilled and experienced Urologist to obtain satisfactory results. In many instances there can be no doubt but what the failure of this method is due to the lack of experience in the hands of the operator.

Practically every hospital now and town of any size has one or more physicians who have specialized in G. U. diseases and have mastered the technique of the use of the cystoscope and catheter to such an extent that we are justified in subjecting almost every case of stone in the ureter to at least one or two efforts at removal by means of these methods. However, in many instances they fail to secure the desired results, namely, passage of the stone and free drainage of kidneys with a return to normal of the patient's general condition, together with removal of infection of the kidneys.

As stated by some of the best Urologists, the average number of times required to pass the catheter for removal of stone was 4½ times to the patient. Some of them, however, require as many as fifteen to twenty-five times. You will readily see that this method is not yet perfected to such a degree that we can place the removal of every stone regardless of location and size within the domain of this treatment, and in many instances I really think that there is more trauma produced by the too frequent passage of the catheter in an effort to remove the stone than there would be in a clean operation. Therefore in many cases to temporize over too long a period means disaster and in many instances a permanent damaged kidney or the loss of the life of the patient. It is to this class of cases that I wish to call your attention to today.

I have nothing new in the way of X-ray demonstrations, pyelography, etc., as the stones which require operation do not differ in the least from those which do not require operation, except sometimes in size or in number. It is not always the largest stone that produces complete obstruction. A small stone of long standing associated with considerable thickening of the ureter, infection of the scar tissue formation, may give rise to complete obstruction more quickly than that of a stone twice its size.

The general surgeon, not being skilled in the use of the ureteral catheter naturally depends upon the open operation for the relief of his patient after the simpler methods have failed, and the use of the

catheter in the hands of his associated Urologist has not been successful. I quote the statistics of some of our largest clinics—stating the number of stones in the ureter requiring open operation. At Mayo Clinics, 40% of all ureteral calculi which apply for treatment are removed by open operation. Bevan of Chicago removed 46%, Johns Hopkins—a correspondingly large per cent. is subjected to open operation.

This naturally brings up the question—what are the indications for surgical removal from the standpoint of the general surgeon.

1st. Stone more than 5 m.m. in diameter correctly X-rayed.

2nd. Impacted stones, which shows no decent by X-ray examination at intervals.

3rd. Unsuccessful removal with cystoscope and catheter.

4th. Large hemorrhage associated with and following renal colic.

5th. Marked impairment of kidney function.

6th. Serious kidney infection.

7th. Chronic hydronephrosis due to obstructive stone.

8th. Multiple stones.

Once you have decided to operate it is important to know the functional capacity of the kidneys. I believe I am safe in saying that no patient should be subjected to an operation with a phthalein test of less than 40% in two hours. The patient's general condition being good, with good kidney function—the removal of the stone from the ureter is a comparatively simple procedure, associated with very little risk as to life and as to complications. Stone in upper two-thirds of ureter can be readily exposed by incision extending from one inch below first rib downward and forward to an inch above anterior superior spine. In lower one-third by longitudinal incision along outer border rectus muscles in its lower third. The muscles are separated down to the peritoneum, which is not opened. The ureter adheres closely to the peritoneum and is peeled forward. Here is where the important part of the operation takes place. The ureter should not be clamped, unless obstructive infection is present. All fat and connective tissue left on ureter. The ureter is held up by two loops of catgut or on assistant's finger, the stone is located—an opening is made in the ureter immediately over the stone amply large to permit of its easy removal, being careful not to injure mucus membranes any more than possible, as complete union depends almost entirely on primary union of mucus membranes—forcing a stone from its original bed is not always advisable unless it is very difficult to remove in its original location, as injury of mucus membranes causes hemorrhage, necrosis, and interferes with primary union of ureteral incision. After removal of stone opening is closed with small chromic catgut, a small rubber drain may or may not be inserted, both have many supporters, some claim drainage adds a possibility of ureteral fistula—personally I prefer a small drain for 24 or 36 hours, on the other hand I have seen many ureters closed without drainage that did perfectly well. I think drainage should always be used in infected cases.

We have performed the open operation, as stated above in twenty-one cases with good results. Have had no urinary fistulas to follow—drainage was removed on the second day. In eleven of these cases, we have had the opportunity during the past six months to catheterize them and make a ureterogram which shows absolutely no constriction at the point of removal of stone. The longest one had been operated on four years and the shortest one six months—with relief of all symptoms and in the majority of cases the infection of kidneys had practically disappeared. You can see from this, that an operation so simple to perform and associated with little or no risk as to life of the patient, with absolute assurance that the stone will be removed and the treatment not to be repeated—that we are justified in advising stubborn cases to submit to the open operation.

I recently operated on one man who had had his right ureter catheterized twenty-three times within the past four months. The last time it was catheterized was ten days prior to his entering the hospital. Our Urologist, with great difficulty passed the catheter beyond the stone and drew off 600 c.c. of urine containing a large quantity of pus. This had to be repeated every day in order to keep the patient from becoming highly septic. This was performed with no decent whatever of the stone and each time the catheter was passed it was associated with considerable pain and bleeding.

The stone was located in the upper third of the ureter. A posterior incision was made, a very large pyo-nephrotic kidney was found. The stone was removed and immediately following the removal a large quantity of pus and urine escaped. The ureter was closed, the kidney replaced in its bed and a rubber drain inserted.

The patient improved rapidly, drained a large quantity of pusy urine, was free of all pain and sepsis, and a month after the operation the kidney pelvis had diminished considerably in size, kidney was functioning well and the pyo-nephrosis had practically disappeared.

As illustrative of this type of case, I want to report one other case—a lady thirty-four years old. History—kidney colic twelve years ago. On admission to hospital temperature was 103, pain in the region of right kidney, with chilliness of body. X-ray revealed stone about 4 m.m. in diameter, lower third of ureter. Attempts were made—every day for three days with cystoscope and catheter to dislodge stone with negative results. On the fourth day the patient's condition was very much worse—she was highly septic, phthalein test 25%. Under nitrous oxide anæsthesia we removed the stone in just a few minutes, with practically no difficulty. Patient died forty-eight hours later from sepsis and anemia.

Such cases as this is positive evidence that many times we temporize on our patients, hoping to do a very beautiful operation with the cystoscope and eventually fail—during which time our patient is suffering a great deal and their general condition rapidly growing worse, and as stated before unless early surgical interference is instituted disaster will follow in many cases.

I therefore repeat that it is my belief that in many cases an early open operation for removal of ureteral calculi should be performed

instead of temporizing with the more conservative methods which are always associated with uncertainty as to removal of the stone and relief of the symptoms.

APPENDICITIS IN CHILDREN

Byrd Charles Willis, M. D., F. A. C. S.
Surgeon, Park View Hospital
Rocky Mount

The subject of appendicitis will continue to occupy the attention of the profession until, owing to prompt diagnosis, ruptured abscessed cases of appendicitis and general peritonitis due to appendicitis are rare. This state of perfection cannot be hoped for until the profession has informed and impressed upon the laity the necessity of calling them early in cases of acute abdominal pain, and then we must do our part by giving a thorough examination before prescribing. This disease we cannot vaccinate against, and by the very nature of the human family, will always be with us unless a religious rite or compulsory law is established for the removal of the appendix at a tender age. And then it would be necessary to adopt the Jewish seven days for circumcision, for Apt in 1917 collected from the literature 80 cases in infants under two years of age, 20 of these cases being under three months.

My associate, Dr. Boice, and I have operated upon 709 cases of appendicitis at Park View Hospital, since July 1st, 1914, with a mortality of 15—2.11%. 120 of our cases were children 14 years of age and under—17%. The total, 709, does not include those appendices removed secondarily to some other operation. Our youngest patient was 3 and oldest 74 years of age. Of the 120 operated cases in children, three died giving an operative mortality of 2.5 per cent. In addition to this, one case entered the hospital moribund and died four hours later without operation. Our cases we have classified as follows:

Chronic or recurrent	26
Subacute	8
Acute, non-perforative	42
Acute, gangrenous, perforating appendicitis, with or without definite abscess formation	40
Acute perforating appendicitis with general diffuse peritonitis	1

We feel unable to say that we have ever operated upon a case of general peritonitis that recovered, and we are able to put only one questionable case in this classification, and that one died. This case had a thinly walled off abscess at head of cecum and another in the pelvis, both abscesses containing a large amount of thin watery, foul-smelling pus. We believe that the walls of these cavities broke down with removal of the fluid and that the peristaltic action spread the infection. Necropsy showed several small abscesses on the left side and numerous intestinal adhesions.

How can a surgeon be sure that a patient has a general peritonitis when he exposes only a small operative area of the abdominal contents? It would certainly be poor surgery to explore the whole abdominal cavity. General peritonitis in our opinion is one of the gravest, most desperate conditions met in surgery, with an exceedingly high mortality rate. Many cases, on opening the abdomen have a large quantity of thick odorless lymph with some localized injection of the intestines, and on locating the appendix abscess it will be well walled off containing foul smelling pus—this case will require drainage, not on account of general peritonitis but because of the localized pus. The same type and amount of lymph can likewise be encountered in a very acute unruptured appendix and require no drainage. We think some of these cases are classified under general peritonitis by some operators. We have not carried them in that classification in our series for we do not consider them as such. To do so makes one's statistics look very fine and seems to justify, perhaps, a high mortality rate.

In our 120 cases there were 104 whites and 16 colored; sex incidence 60 female and 60 male; temperature, highest 104—lowest, 96.5; pulse, highest 160—lowest, 72; days sick before hospitalization, longest 14, shortest 4 hours; 38 histories recorded that purges had been administered; 53 had histories of previous attacks, highest leucocyte count 39,800—lowest 6,200. The maximum hospital days of confinement was 36, minimum 7. The patient confined to the hospital 36 days had a complicating pulmonary abscess but survived after a very stormy convalescence. Number of cases drained were 45, 4 more than number of ruptured cases. This drainage of the 4 extra cases was thought best owing to the possibility of contamination in the difficult removal cases of acute appendicitis. The appendix was not removed in 9 large abscess cases, as we thought it unwise to hunt for an appendix that could not be readily found, feeling that discretion is a better part of valor in certain cases—remembering the old adage, "He who fights and runs away may live to fight another day." Types of operations 116 muscle splitting McBurney incisions, 3 right rectus, and one acute, unruptured appendix was taken through right hernia incision because patient's relatives asked that this be done so as to cure hernia if possible. We are firm believers in the muscle splitting incision if a definite diagnosis of appendicitis can be made. Think it more difficult for the surgeon to operate through, perhaps, but far better for the patient in respect to drainage, post-operative hernia and shorter convalescence. If one should find insufficient room to operate through he can secure an abundance by extending incision toward median line by cutting the anterior and posterior sheath of the right rectus and retracting the muscle inward.

We think the symptomatology of appendicitis in the child is similar to that in the adult, but more sudden in onset and more rapid in development, requiring patience on the part of the physician to elicit the information. It is harder to obtain a satisfactory history from children, as they are often suspicious of physicians and will withhold valuable information. We have seen cases with very clear histories given by their parents, hold their abdominal walls rigid to the exam-

iner and say, "it doesn't hurt," but at operation, find an acutely inflamed appendix—the high leucocyte count having told the tale.

We agree with Motley that the most constant finding is a high leucocyte count. It is more common for the parents to attribute the abdominal pain to a dietary indiscretion. If the child should vomit a large amount of food they are quite convinced it is due to that, and as a rule a purgative is promptly given. The urine in all cases should be examined before operation to exclude pyelitis.

It is our practice to operate in all cases of acute or suppurative appendicitis immediately after the diagnosis is made, disregarding the Ochsner' period of 48 hours. If pus is in the pelvis we adopt the Murphy-Fowler treatment and position in the after care. When the pus is around the cecum we turn to the right side but do not elevate the head of the bed for fear some pus will gravitate to the pelvis. The morphine treatment according to Crile is given—sufficient to depress the respirations to 12 per minute, thereby paralyzing peristalsis and allaying restlessness. A large number of our cases are given a hyperdermoclysis while undergoing operation and allowed nothing by mouth for 18 to 24 hours. Glucose and soda solution by bowel is useful in combating acidosis which is a quite common complication in children. The type and quantity of drainage material used in these cases is a very important factor in their removery. It has been our practice to put in from two to four pieces of rubber tissue to the most likely points of pus formation without any gauze unless there is some oozing. In this case we use two to four pieces of hempacking inside the rubber tissue, allowing it to project about two inches out of the end. We are very careful not to place the rubber tissue with or without gauze against the exposed end of an unburied appendix stump for fear of a fecal fistula. This complication occurred once in our series and as a round worm came through his wound we feel that it had something to do with it. There were no cases of post-operative obstruction requiring operation nor known hernias. One recent case has a weak wall and we fear will later develop a hernia. It takes longer but we try to carbolize and bury the stump in all cases, carrying the ends of the purse string suture around the meso-appendix for a second ligature on the blood supply, thereby reinforcing the purse string with the meso-appendix stump.

PSEUDO-APPENDICITIS CONSIDERED SURGICALLY

J. F. Highsmith, M. D., F. A. C. S., and J. D. Highsmith, M. D.
Fayetteville

The question of chronic appendicitis calls for attention not because of a high *mortality* rate but because of a rather disconcerting *morbidity* rate, a post operative persistence of symptoms. When a patient complains of the same symptoms after appendectomy as he did before operation, there is sufficient reason for belief that the original symptoms were not caused by the appendix.

Pseudo-appendicitis is a condition simulating appendicitis. Cases in which, following appendectomy, a persistence of the symptoms can-

not be rationally explained by some such condition as (1) Gastric or duodenal ulcer, (2) Cholecystitis, (3) Pancreatitis, (4) lesions of the genito urinary tract and of the uterus and adnexa, (5) tuberculosis, (6) syphilis, (7) malignancy orthopedic conditions and spinal cord lesions, we will speak of as pseudo-appendicitis.

ETIOLOGY

Cases of pseudo-appendicitis are usually in young, thin adults from fifteen to thirty years of age, and is about equally divided as to sex and between married and single. These patients are most all neurasthenics and have general abdominal ptosis.

This condition has been the subject of an extensive monograph by Singer upon Pseudo-appendicitis and Iliocecal pain, among many other conditions that may closely simulate chronic appendicitis—he has called especial attention to distension of the cecum, due in most instances to a spastic condition of the bowel lower down, not only does the pain resemble that of chronic appendicitis with no acute attacks, but there is present tenderness in the right iliac fossa with deceptive phenominæ upon palpatation.

Sometimes the condition is due to a Lanes kink, a Jackson's membrane, Meckels Diverticulæ, Cecum Mobile, Cecum Torsion, Pericolic Membrane, adhesions between illeum and colon or a Megaduodenum. Endocrine disfunctions also play an important role.

SYMPTOMS

As I have said before these patients are as a rule neurotic and may have hysterical attacks in which they may simulate appendicitis and may even manage to raise a little temperature. Sometimes a goitre is present and there may be other symptoms and signs of deficiency in the internal secretions.

Pain is always present but rarely puts the patient to bed. There may be a history of many attacks of pain, some recurring at regularly stated intervals. The pain may be mild or severe, frequently it is continuous and dull aching in character. It is usually located in the right iliac fossa but may be anywhere in the right side of abdomen or at umbilicus.

Indigestion and flatulency are as a rule complained of.

Almost always there is constipation.

Nausea is usually present and there may be vomiting.

Gurgling in the right iliac fossa with gas tumors are almost constantly present, frequently these patients have regurgitation of sour material into the mouth.

Hypersensativeness and tenderness are present in the right iliac fossa.

DIAGNOSIS

A careful painstaking history is very important. In all cases there should be a careful examination of the blood, and a spinal fluid examination. Leukocytosis will be absent. Lymphocytosis sometimes

present, blood Wassermann and spinal fluid are as a rule negative except there may sometimes be an increased pressure in the spinal fluid.

The feces should be examined for parasites, blood and mucus. Gastric contents should be examined for blood and the free hydrochloric acid carefully noted. Also the duodenal tube should be passed and the bile obtained from the gall bladder and carefully analysed.

A complete urologic study should be made of all these cases of chronic pseudo-appendicitis. The bladder should be cystoscoped and the ureters catherized. Pyelography will also be indicated in some cases.

In the proper hands Radiographic examination of the gastro-intestinal tract is the most reliable method of diagnosing chronic appendicitis or a pseudo-appendicitis. The mobility of the cecum is absolutely determined as is also the question of (a) visceroptosis, (b) iliac stasis, (c) dilated cecum, etc.

In the differential diagnosis we must consider (1) cerebro spinal lues, (2) hysteria, (3) Duodenal ulcer, (4) chronic cholecystitis, (5) chronic pancretitis, (6) ureteral kinks and strictures, (7) chronic pyelitis, (8) movable right kidney, (9) varicocele, (10) spondylitis and other orthropedic conditions, (11) Tuberculosis of the cecum, (12) certain conditions of the uterus and adnexia, (13) lead colic, (14) worms and foreign bodies in the appendix. All cases of typhlitis of varying severity may give rise to diagnosis of appendicitis.

If the patient is unwilling or unable to submit to this careful differential diagnosis, then it should be explained to the patient or to some responsible relative as to the uncertainty in result of treatment.

If it is then decided that the appendix shall be removed without the patient undergoing the process of differential diagnosis the operation will be exploratory with the diagnosis and prognosis withheld until after the operation.

TREATMENT

As practically all of these cases of pain in the right iliac fossa, not accompanied by any acute abdominal condition, are neurasthenic and the great majority of them are accompanied by splanchnoptosis (and which we speak of as being cases of pseudo-appendicitis) the question of treatment is a very important and knotty proposition.

It is our custom to operate upon these patients and then put them upon medical treatment for a period of months. In order to do this it is first necessary to explain the patient's condition to him, trying to impress the fact upon him that he or she is suffering as much from a condition as a disease.

We have found from experience that operative intervention brings the greatest percentage of relief. You must make your incision somewhat higher on the abdominal wall than one would ordinarily make for a simple appendectomy. We never employ the McBurney muscle splitting incision in cases of this character on account of the inability to properly explore the abdomen, and it is very important not to over-

look any pathologic process in the gall bladder or biliary tract, stomach and duodenum, kidneys and ureters, spleen, sigmoid or pelvis. We explore these various organs first, then turn our attention to the ileocecal region and appendix. A Lane's kink, Jackson's membrane, or any adhesions are removed in the proper manner if they exist. A dilated prolapsed cecum should be plicated and the appendix removed.

Charles Gordon Heyd says in his clinic at the New York Post-Graduate Hospital (see Surgical Clinic of North America) April, 1921:

"It is interesting to note that the cases that we have operated upon for chronically diseased appendices and whose only complaint was pain in the right lower quadrant have as a rule not been uniformally benefitted by the operation. Where we have corrected a dilated or atonic cecum or done a cecoplication and more rarely a cecofixation or have attended to a gross pathologic change in the cecal region or in the tube and ovary, these cases have been cured of the pain in the right lower quadrant. But where a simple appendectomy has been done for the sole complaint of pain in the right lower quadrant we have been chagrined to find that these patients have not been cured by an appendectomy."

Following the operation the patient should be kept in bed three weeks or longer. As soon as he has recovered from the effects of the anesthetic the foot of the bed should be raised from four to six inches if there is a splanchnoptosis, the room should be kept quiet and as soon as possible the patient should be put on a fattening diet and a tonic. We find that Nujol and cascara given daily are valuable adjuvants in keeping the colon empty. At the end of about ten days we start giving them high colonic irrigations of Sodium Bicarbonate daily and an occasional gastric lavage if indicated. Some we must give thyroid extract or polyglandular therapy, others must be treated for hyperthyroidism.

The treatment does not cease when the patient leaves the hospital but is continued for three, six or twelve months. We have them continue the high colonic irrigations at home. We instruct them as to the importance of a daily evacuation of the bowels and prescribe Nujol or Cascara and diet for this purpose. Some we have wear an abdominal support and others, particularly women, are much benefitted by massage and setting up exercises. The question of rest is very important and we prescribe rest periods daily. We write out the rules they must go by and also give them a diet list.

In conclusion would like to emphasize the importance of thoroughly informing the patient in a tactful way the necessity of individualizing their disease as a condition and that the removal of the appendix, while it is timely and in place, will not alone bring relief but that conditions at large such as I have outlined must be treated in a general common sense way for weeks or months as may be necessary.

We could report numbers of cases illustrative, but deem it unnecessary in the short time given to this paper.

DRAINAGE IN APPENDICITIS

HENRY NORRIS, M. D., F. A. C. S., RUTHERFORDTON
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So many have been the papers written and discussions evoked upon this subject, that I rather hesitated about adding one more to the already too long list, but it has happened that we have seen, and operated upon within the last few years, the end results of too many drainage cases; adhesions, sinuses, fecal fistulæ, and post-operative ventral hernias. Despite the many advances made in surgery within the last twenty-five years, there stands out still, in the minds of many surgeons, the stumbling block of drainage after abdominal sections, though we know from experimental work, as well as from clinical experience, how much the peritoneum can take care of successfully. The old dictum used to be, "When in doubt—drain," but for years surgeons have been trying to banish this comforting saying from their vocabulary because of the evils which inevitably follow in its train; the patient's stay in the hosptial is prolonged, the risk to life is increased and post-operative complications, the chief of which are adhesions, infections and secondary abscesses, ileus, phlebitis, pneumonia and hernias are actually invited. Last, but not least, the patient's finances are thoroughly stretched and often exhausted; nothing is more expensive than pus. I would change then the old dictum to the newer one: "The more experienced the surgeon, the less the drainage."

In reviewing our appendicitis cases since the war, five hundred in number, operated upon by my associates and myself, I was rather mortified to find that there were one hundred and six drainage cases, as we have always considered ourselves rather radical upon this subject. But on careful analysis of the series, I found that practically only abscess cases were drained, and offer as justification the fact that a large percentage of our cases of appendicitis reach us in a "cold-storage condition," seldom seen in large cities. Gangrenous ruptured appendices, with free fluid in the abdomen need not be drained if the operation is properly performed from start to finish. Much lies in those last few words. After a man learns to remove an appendix surely, easily and swiftly, he must develop an almost flawless technic in which his assistant and nurses co-operate to the fullest degree. Many surgeons if asked: "Why did you drain that particular case?" would say: "Because it was too dirty to close." What was too dirty, the peritoneal cavity? No. The entire wound was contaminated. Experience has taught them that the wound would break down, if sewed up. If a drain is introduced, does not the wound break down anyhow? Yes. What then is the solution? The peritoneum can and will take care of much filth; it is impossible to thoroughly drain it. The wound edges must be protected before, during and after removal of the appendix. Make any sort of preparation of the skin, so long as it is thorough, use whatever incision you prefer, remove the appendix in your accustomed manner, deal with the base

as you like; ligate, cauterize and drop back, or cover it in, it does not matter, but protect your wound edges, or you cannot get away from suppuration and drainage. Our own technic briefly is as follows: soap, water and alcohol, preparation of entire abdomen. When the patient comes to the operating table, after sheets are draped, abdomen is well cleaned with alcohol, dried and a 4% solution of iodine is applied to the operative field only. A laparotomy sheet with a slit is then adjusted; after the incision is made through skin and fascia, all bleeding points are caught and ligated, and before the peritoneum is opened, towels, or better still, pads, made of several thicknesses of nainsook, are clamped over the wound edges by forceps, specially designed for this purpose, which have quite long handles, and lie flat, out of the operator's way. After entering the abdomen, the cecum is delivered in those cases in which it is possible to do so. As a rule no effort is made to pack off, or push up loops of intestines adjacent to the operative area, to do this is time consuming and unnecessary; the more gauze introduced into the abdomen, the greater the probability of subsequent adhesions. After the meso-appendix has been ligated, and the appendix removed, any free fluid is rapidly and gently sponged out and the gut is replaced. A word of caution here about perforated appendices may not be amiss; invariably in these cases, one or more fecal concretions will be found, if not in the organ itself, a search should be made in the abdomen and these foreign bodies removed; when left they prove to be one of the causes of persistent sinuses, and sometimes of fecal fistula. When the peritoneum is closed, laparotomy pads, towels, and contaminated instruments are removed, gloves changed and the suturing of the abdominal wound is completed. In the peculiarly bad smelling cases, we often flush out the wound with ether after closure of the peritoneum. We always try never to touch the skin with the gloved hand, before or after the preliminary incision. Abscess cases which are well walled-off, naturally must always be drained, either by glass tubes or rubber drainage. When a wound shows evidence of infection, after operation, hot compresses are applied continuously; they are opened early and dressed frequently. In the series of five hundred cases, there were eleven deaths; of which eight were due to peritonitis, two to fecal fistula, and one to pulmonary embolism. The longest time in hospital was one hundred and thirteen days; this patient had a fecal fistula, pneumonia and empyema. Shortest time in hospital was ten days, average hospitalization, seventeen days.

DISCUSSION

Dr. J. W. Long, Greensboro: Two of the essayists have asked me to say a few words about their papers, but they have opened such large fields that it will be impossible in the time allotted to one discussion to say much and I will only touch the subjects in high places.

Referring to Dr. Willis' paper, I beg to call attention to the fact that one of the difficulties in dealing with acute appendicitis in children is that children have a very poorly developed omentum. The omentum is the greatest friend of the patient in these acute infections.

The patient who has a large omentum to come to his relief while the physician and surgeon are making up their minds is far safer than those who have a small thin omentum.

Dr. Willis' mortality is about like that of other men's. I had occasion a few years ago to look up my statistics. I told my secretary to go back over 200 cases in children with acute appendicitis. I found we had three deaths in 200 cases. One interesting point in this connection was that the ages of the patients ranged from three and a half to twenty-five years, with an average of 15 to 17 years. In other words, there is an age in childhood in which children are more vulnerable to appendicitis, just as they are more vulnerable to contagious diseases.

I was very much pleased with Dr. Highsmith's paper, and the only criticism I would make of his excellent and well-studied address is that he seems to have confused the issue somewhat by bringing in everything that could possibly cause a pain in the right iliac fossa. True it is a broad subject and should be considered from many angles, therefore it is perhaps best to treat the subject as he has.

Dr. Highsmith speaks of "Jackson membrane." I do not want to be personal, but this so-called Jackson membrane is a condition I described and illustrated in the International Journal of Surgery and in the transactions of the American Gynecological and Obstetrical Association in 1896, twelve years before Jackson wrote a word upon the subject. Dr. Highsmith said he removes a Jackson membrane or any adhesions that may be present.

I am sure that removal of any abnormal adhesion that is hindering the movements of the intestines is the proper thing to do. But often these adhesions or membranes or pseudo-cauls or whatever one may call them are helpful rather than harmful. Usually they are found in cases of cecummobile. They spring from the region of the hepatic flexure and extend downward and sprangle over the ascending colon and cecum. Their purpose evidently is to hold up the movable prolapsed head of the colon. I rarely remove or even interfere with these veil-like membranes. The rational thing to do is just as indicated by Dr. Highsmith; remove the appendix and plicate the cecum.

Dr. Highsmith's discussion of the subject is interesting and deserves mature consideration.

Dr. B. J. Lawrence, Raleigh: I do not know that I can add very much to the discussion, yet I want to say that while Dr. Highsmith's paper does cover a great deal of ground, as I view the field of abdominal surgery, certainly from the standpoint of a young man, there is a great deal of ground to be covered when one is making a diagnosis of pathology in the right iliac fossa.

I was once asked how to make a diagnosis of chronic appendicitis, and after various answers, the gentleman finally said, "By one sentence, the process of elimination." The essayist certainly emphasizes this in an admirable way.

I think if Dr. Highsmith has done nothing other than to bring forcibly to our minds, certainly to the minds of the younger of us,

the stern fact that appendices have been removed in the past and are today being removed on the spur of the moment, when the pathology is elsewhere, and it will make us stop and think of the vast possibilities that the little region called the right iliac fossa holds for us, he has done us a favor. I enjoyed his paper, and believe it is very timely.

Dr. J. W. Long, Greensboro: I note that in the beginning of Dr. Norris' paper he apologized for the subject selected, which he should not have done. The subject is an interesting one. I enjoyed it. When Dr. Norris writes a paper we always get something good out of it. I agree with him exactly in reference to drainage.

Dr. R. T. Ferguson, Charlotte: I want to say a word in regard to drainage. The last two years I have been using my old rubber gloves for these abscess cases, clipping the five fingers at the end, running plain sterile gauze through to the tips and putting in one drain, and leaving for 24 hours to 48 hours. I find it an excellent drain. I have never had any obstruction of the bowels from the use of it, and I count it one of the best drains to be made, and besides saves you from buying rubber drainage, for you have plenty of old gloves.

Dr. Greene, Chairman: Did you say the whole glove, or just the fingers?

Dr. Ferguson: The whole glove.

Dr. D. Heath Nisbet, Charlotte: Dr. Highsmith has touched one point especially interesting to me, that is telling the patients that after the operation they may not be benefitted. I believe some surgeons make the mistake of telling the patients that they will certainly be benefitted after they recover from the operation. We see so many cases post-operative where the symptoms have not been relieved in any way.

Another thing, in these cases of chronic appendicitis or pseudo-appendicitis, it would be a good thing to try out medical treatment first, because we all know there are many people going around with chronic appendicitis and they may get all right and they may not, but I believe that medical treatment for a few months should certainly be tried, and then if the symptoms do not clear up, use surgery.

Dr. Willis, closing the discussion: The only thing I have to add is that we never have put any stiff drainage into the abdominal cavity. I had the misfortune, I might say, to have to do the autopsies on two cases where it was the cause of death. The glass tube may have been misplaced in the beginning but it is also true that it caused obstruction. I have never felt the need of using a glove in an appendix case; I have used it in pelvic cases. I would think the drainage would be too great for one thing in that particular field, and render the patient more liable to have a resulting hernia. The possibility of an obstruction taking place in the area of drainage if it is removed within 24 or 48 hours must be considered. We have some adhesions to form

in 12 to 24 hours, but by removing such a large drain it would certainly be unsafe, as it would break down the light adhesions, allowing the intestine to escape.

Dr. Highsmith, closing the discussion: There is a condition of acute pseudo-appendicitis, those acute abdominal conditions, simulating appendicitis. The class of cases which we have particular reference to in this paper are the cases of chronic appendicitis among those individuals who usually have splanchnoptosis.

In regards to Jackson's Membrane, I simply mentioned that in passing. I think it can probably be considered in the differential diagnosis. Dr. Long is probably correct in his statement regarding it.

I want to emphasize one thing and that is that we want to impress these patients with the fact that they are suffering as much from a *condition* as a disease.

Dr. Norris, closing the discussion: I thank Dr. Crowell for his remarks, and I would say to Dr. Willis with regard to drainage, that I tried to make it clear, that we only put them in well walled off cases. The purpose in draining is to hold your wound edges apart. Of course it is needless to say anybody should have sense enough to take out any kind of drain before it causes an obstruction.

HARELIP AND CLEFT PALATE

THE USE OF FASCIA TO RELIEVE THE TENSION ON THE STITCH LINE AND TO SUPPORT THE FLAPS IN THE OPERATION FOR CLEFT PALATE

Addison G. Brenizer, A. B., M. D., F. A. C. S.
Charlotte

The various forms of harelip and cleft palate arise, during the development of the embryo, from the failure of union of the separate processes which enter into the formation of the lips and the mouth. If the processes which normally form the lip fail to unite, while those which enter into the formation of the palate join together, harelip, without a cleft of the palate, is the result. On the other hand, the upper lip may be perfectly formed but the palate cleft. The union of the individual processes begins in front and proceeds backward.

Very little is known as to the cause of these deformities. The same influences that pertain to other developmental defects are also potent in the causation of these deformities. Heredity, consanguinity, syphilis, imperfect metabolism, endocrine organ disorders and pathological affections of the female generative organs through misplacement, defective form or inflammatory conditions, may each be entitled to consideration as predisposing factors.

The most common forms of lip fissure are single harelip in which there is a division on the right or left side of the median line, and double cases with fissures on both sides of the upper lip. They are

usually described as of first degree when the fissure involves only a portion of the lip, second degree when the cleft includes the entire length of the lip to the nose and third degree those in which wide fissures extend completely through the lip and include also the alveolar and palatal bone structures. The photographs accompanying this publication are harelips of the third degree.

The lip should be closed, whenever possible, the earliest day after the birth of the child that circumstances will permit. Good results can be secured at any time within the first two or three months and even at six-months-old or later, although such delay should be avoided if possible. The chief reason for this course is that after the harelip has been closed, spontaneous closure of the cleft in the anterior part of the palate takes place to a considerable extent as the development of the jaws proceeds. The cleft in the palate is consequently more easily closed by a suitable operation at a later period.

Sometimes it is desirable to help the closure of the lip by first freshening the contiguous surfaces of the alveolus and to unite the bones by a wire suture and even to help the contact through suture by fracturing the junction of the pre-maxilla and maxilla opposite the side of the cleft (Plate II, Fig. e). With double harelip, it is likewise sometimes desirable to take a wedge out of the nasal septum so as to be able to push the pre-maxilla back before beginning the lip closure (Plate II, Fig. f).

The most obvious part of a harelip operation is paring the edges of the cleft and sewing together the raw surfaces thus obtained. But an equally important step consists in freeing the lip sufficiently from its attachment to the maxilla to enable the cut surfaces to be placed in contact without undue tension. It is only by freely detaching the nostril from its bony attachment in this region that it can be displaced inwards sufficiently to correct the deformity (Plate I, Figs. 4 and 5).

The types of cleft palate vary from a bifid uvula to fissures which divide the velum palati or the bony palate partially or completely and continue entirely through the alveolar ridge and the lip. They may be single or, if associated with double harelip, be divided through the central line by the nasal septum and the vomer in such a manner as to have the appearance of a double cleft palate (Plate II).

There are several distinct operative methods of performing the operation of repair of cleft palate: (1) Compression (forcing the sides of the bony palate in early infancy as advocated by Garretson, Brophy and others); (2) Flap-reversing operations (Lane, Davies-Colley); (3) Bone and Muco-periosteum flap formation (Ferguson); (4) Median muco-perosteal flap sliding operations (von Langenbeck-Warren).

Some surgeon humorously said, "that he had a cleft palate that he used to operate on." There are actual serious objections to the principles and technical steps of the operations of types 1, 2 and 3, mentioned above. The operation of type 4, the Langenbeck-Warren operation, is correct in principle, technically difficult and may result, though correctly done, in many failures; the failures, however, do not necessarily render the palate irreparable. The usual failure is due to a

non-union of the flaps at the points of suture. To obviate this difficulty, I have been using, for the last three years, a strip of fascia taken from the fascia lata of the left leg to relieve the tension on the stitch line and to support the flaps. I had used fascia as a grafting material in a number of situations and had suspected before using it in this situation that it would act as a good traction sheet in drawing the flaps in closer apposition, that it would relieve the tension on the stitch line, that it would act as a diaphragm above the flaps to take the brunt of pressure of the tongue, that it would serve to immobilize the flaps and prevent their movement up and down. I had hoped that the fascia would heal in and lend its strength and thickness to the palate even in the presence of contamination from the nasal and buccal cavities. If it did not heal in, I had hoped that it would remain in place until its purpose was served. To my gratification and surprise, not only has the fascia remained in place and healed in with the muco-periosteal flaps, becoming incorporated as a part of the flaps, but, at least in two cases the fascia has served to conduct bone cells from the periosteum on either side across the middle line, giving so far as I am able to tell, a bony palate. Plate III illustrates the principle steps in the Langenbeck-Warren operation as performed by V. P. Blair, of St. Louis, and as adapted to the use of my strip of fascia to relieve the tension on the stitch line and to support the flaps.

As soon as possible after birth the harelip should be closed. If at the end of four to six months the alveolar border and front part of the palate has not closed spontaneously, this should be wired into place. The rest of the hard palate and velum palati should be closed one year later, that is, at the eighteenth month. By having the palate so completed before the child begins to talk, there is less likelihood of the acquirement of wrong speech habits which are sometimes difficult to overcome in later life. The photographs show the results of this progressive treatment in some of my cases of harelip and cleft-palate.

Plate I. Shows several rather simple incisions, in plastic surgery, for the proper alignment of edges in the harelip operation. The length of the wound edges on each side of the cleft, from the nares to the vermillion border, should measure the same. The scar retracts somewhat, so that the lip border should be longer than finally desired. The outer portion of the lip and the ala of the nose should be well undermined, well cut away from the maxillary bone, as indicated in Figures 5, to allow the nose to be brought together and the lip to close without tension, as shown in Photographs 1 and 2.

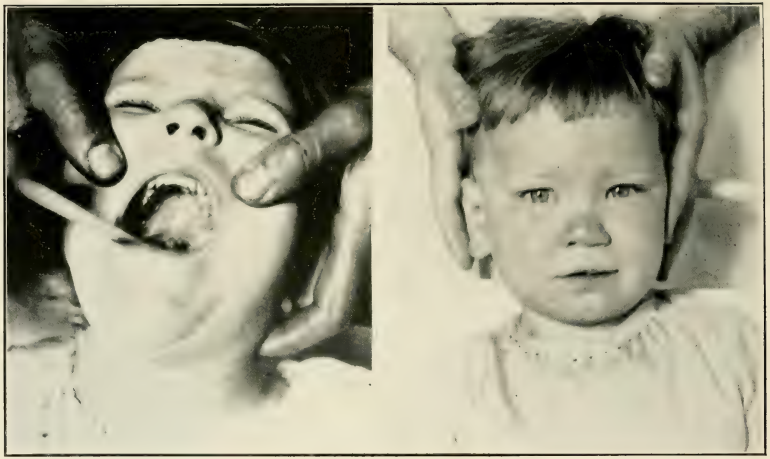
Plate II. Figures (a), (b), (c) and (f) show the different types of cleft palate. Figure (f) is the so-called double cleft palate; the alveolar process is split on both sides with protruding pre-maxilla. Figure (d) shows the cleft in Figure (c) after pressing the prominent pre-maxilla back and closing the lip at a very early age. Occasionally in older children the alveolar process must be wired as shown in Figure (e) or in double cleft a small wedge taken from the nasal septum to allow the pre-maxilla to be pushed back, Figure (f).

PHOTOGRAPH 1

PHOTOGRAPH 2

PHOTOGRAPH 3

PHOTOGRAPH 4



Photograph 5

Photograph 6

PLATE III. The Modification of the Langenbeck-Warren operation for cleft palate as done by V. P. Blair and as modified by me for the purpose of using a strip of fascia to take the tension off the flaps and to support the stitch line. Figure (a) shows the separation of the mucoperiosteal flaps from the underlying bony edges through two small counter incisions. Figures (c) and (d) show the paring of the edges of the flaps. Figure (h) shows the strip of fascia, taken from the fascia lata, armed with six silk sutures. Figure (e) shows the fascia placed above the flaps and the six silk sutures stuck through the flaps. Figure (g) shows the edges of the flaps drawn together by traction on the sutures. Figure (f) shows the interrupted mattress stitch taken in the wound edges. Figure (i) shows all stitches tied.

PHOTOGRAPH 1. Is a four-months-old child, with a single complete harelip and cleft palate. The pre-maxilla is prominent, the alveolar border wide apart and the ala of the nose pulled out widely.

PHOTOGRAPH 2. Is the same child five days after operation. The alveolar border was not wired and will likely close spontaneously as shown in Plate II, Figure (d). If the alveolar border does not close by the sixth month it will be wired in place as shown in Plate II, Figure (e). The ala of the nose has been undermined and brought close in, it is purposefully so placed to avoid the error shown in Photograph 6, where the ala still remains too wide.

PHOTOGRAPH 3. Is a child three weeks old with a marked single complete harelip and cleft alveolar border. The lip cleft is wide and the nostril pulled wide open.

PHOTOGRAPH 4. Is the same child exactly three weeks after operation and now six weeks old. The alveolar border will likely close spontaneously. This is an ideal case, done at the proper time. If this child had a complete cleft palate, it would become narrowed in front after the lip closure and would be operated again at the eighteenth month.

PHOTOGRAPH 5. Is a little girl six years old operated on one year ago, using the technic illustrated on Plate III. The palate is well united back to the tip of the uvula and the function is good. The fascia has remained in place, has become incorporated in the flaps and has conveyed bone cells from the periosteum across the mid-line giving a bony palate. While the result both structurally and functionally is almost perfect, the child still retains certain nasal sounds and must have speech training. Another little girl operated by the same method two years ago, when she was eighteen months old, speaks perfectly. The operation should be done early, though good effects can be gotten later through training.

PHOTOGRAPH 6. Is a little boy three years old, eighteen months after operation for single complete harelip and cleft of the alveolar border. The lip length and scar are very good, but the nostril is too wide, see Photograph 2. The child should have been operated on the first month after birth.

PLATE I

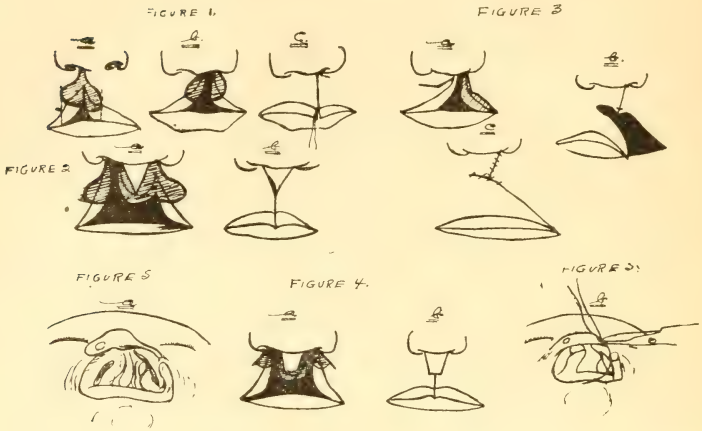
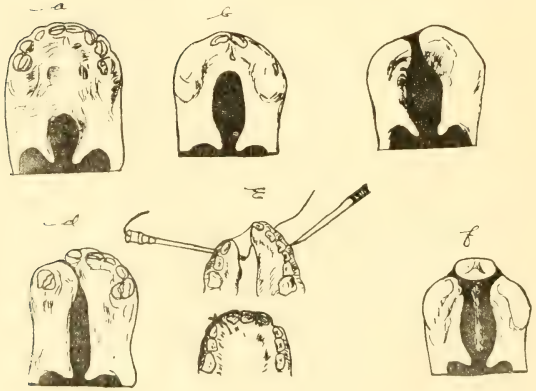
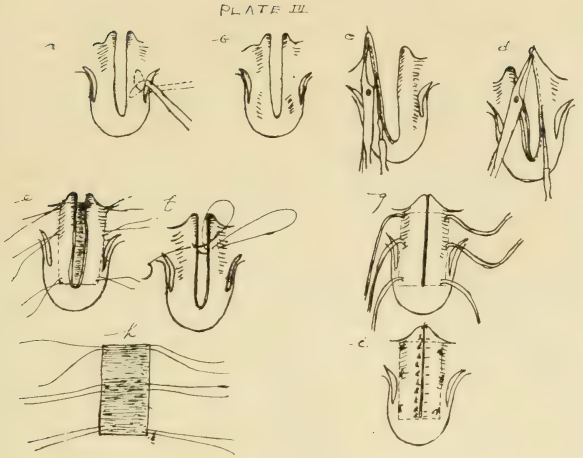


PLATE II





SACRAL ANESTHESIA IN PERINEAL PROSTATECTOMY

A MODIFICATION OF YOUNG'S OPERATION WITH SUMMARY OF CASES

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The purpose of this paper is to discuss briefly: first, the value of sacral anesthesia in perineal prostatectomy; second, to describe and illustrate a modification of Young's perineal operation, and third, to give a brief summary of a series of cases operated upon at our clinic.

Our experience with sacral anesthesia has been eminently satisfactory. We have used it with one exception in 33 consecutive prostatectomies without an unpleasant result at the time of or following the operation. Its application is simple and easy, its dangers insignificant if given with due precaution. Its influence lasts from three to eight hours and does away with the gastric disturbances and pulmonary complications which frequently follow a general anesthetic. We believe it a good practice to use sacral anesthesia as a routine. It is certainly very advantageous in cases of arterio-sclerosis, cardiac and pulmonary complications and in cases of high blood pressure due to nephritis.

Deliberation and thoroughness are virtues in this work and under sacral anesthesia such is possible. Rapidity is important under a general anesthetic in order to prevent post-operative complications.

Most people are afraid of a general anesthetic and this fear adds to the shock of the operation in such cases. Local anesthesia removes this fear.

Nerve blocking is a practice of long standing but its application for the removal of the prostate gland is of recent practice. In looking up the literature on the subject, we were surprised to find that Dr. Parker Sims was the only person reported as having done perineal prostatectomy under its influence. Many suprapubic prostatectomies, however, have been done under the combined influence of sacral anesthesia and infiltration of the abdominal muscles with cocain or novocain.

The sacral plexus is easily reached and blocked off through the triangular space formed by the sacral cornua at the sacrococcygeal articulation. A spinal puncture needle is inserted directly into the sacral canal until it is felt to pass through the ligamentous structure covering this triangular space. It is then directed upwards, parallel with the sacral canal for 3 or 4 m.m., and 30 c.c. of a 2 per cent. solution of novocain is injected slowly in order that it may thoroughly infiltrate the tissues. Malformations of the spinal canal should be kept in mind and a moment's time elapse after the obturator is removed to see if the spinal fluid escapes; if so, the puncture should be made elsewhere. Twenty minutes should elapse after the solution is injected before the operation is begun.

The internal pudic nerve gives off filaments to the skin in the perineum, posterior half of the scrotum and to the penis. The anterior half of the scrotum is supplied by the genito-crural and ilio-inguinal nerves. The second, third and fourth sacral pairs of nerves constitute the hypogastric plexus which supplies the bladder, the rectum, the prostate and the pelvic peritoneum. From this distribution of nerves one can readily see how the entire field of operation is anesthetized by blocking off the sacral plexus. The traction on the pelvic peritoneum necessary to complete the enucleation occasionally causes pain and it is necessary to administer gas for a few minutes after the gland is exposed and separated from its capsule while delivering the gland. The extent of the anesthesia is largely dependent upon the accuracy with which the solution is injected. When used, the gas can be discontinued as soon as the gland is removed. The wound is closed without pain and the patient's suffering greatly modified from three to eight hours after operation. There is practically no shock following the operation under its influence and certainly far less than that following a general anesthetic in our experience. We have seen no shock following this operation under sacral anesthesia.

Men change their views with regard to measures and methods as a result of scientific investigation and experience but there are certain fundamental principles which never change. The law of gravity is unalterable. This is undoubtedly true when applied to the drainage of wounds. No drainage is so effective as that from the most dependent point and this fact is taken advantage of by every surgeon. Even the gall bladder would thus be drained if possible.

A knowledge of this law was used by that great mechanical genius, scientific student and indomitable worker, Hugh Hampton Young in 1903, in designing an operation for the removal of the prostate gland, which drains not only the wound but also the urine without the use of mechanical devices. For nearly twenty years, notwithstanding the adverse criticisms of those who advocate other operations, this one has stood unchanged. Those of us who have followed his technique or slight modifications thereof, know that our percentage mortality has been less than that obtained by those who have done the suprapubic operation with its various modifications. We have had less complications during convalescence and to say the least we obtain equally as good permanent results. During the last twenty years statistics show that the percentage mortality following the suprapubic operation has been at least twice as great as that obtained following the perineal operation designed by Young. Some of the suprapubic advocates tell us that they lose more patients following the first step, in the two stage operation, than following the removal of the gland. These could not be reported as mortalities following prostatectomy since the gland had not been removed. We believe that the mortality following suprapubic drainage is greater than drainage by intermittent catheterization and the retention catheter.

This operation has been recognized for twenty years as the ideal perineal operation for the removal of the prostate gland but this does not signify that it cannot be improved upon. Young himself so recognizes this fact and has recently made some very excellent modifications of his original operation, a description of which you will find in the Journal of the American Medical Association, April 1, of this year. In it he advocates and illustrates very beautifully a method of removing the gland *en masse*. It is practically the operation we have been doing for the last two years and which was described by the reader of this paper in his chairman's address before the Urological Section of the Southern Medical Association at Hot Springs (1). The main differences in the two operations are: first, Young makes an inverted V-shaped or a unilateral incision through Desnonvilliers fascia and capsule of the gland on its inferior surface for the purpose of enucleation, whereas we peel it out of its capsule through the dilated prostatic urethra without disturbing this fascia or capsule. This part of his modification appeals to us however and we shall try it. Second, he makes an effort to preserve the mucous membrane covering the lateral lobes of the gland as well as the floor of the urethra. We destroy the urethral mucous membrane where all three lobes are enlarged and restore it by bringing down the intravesical portion of the capsule, covered with its mucous membrane and suturing it to the capsule below. The floor of the urethra is restored in the same way. Third, he still packs the capsule with plain gauze to control hemorrrhage whereas we control it by packing gauze covered with perforated rubber tissue between the bladder drainage tube and the restored prostatic mucous membrane. This tissue-covered gauze does not adhere to the surrounding tissue, controls hemorrhage, is more easily removed and its removal is followed with less hemorrhage and causes less pain to the patient than when packed with plain gauze.

It is almost impossible to enucleate the gland, especially the large adenomatous one, without destroying or greatly injuring the prostatic mucous membrane and usually it had better be removed in such cases and restored in order to eliminate the redundant folds of mucous membrane which later might obstruct urination. Of course every case is a law unto itself and the exact technique of its removal must be decided upon at the time of operation. In some cases of simple lateral lobe enlargement the original Young operation is preferable. Where all three lobes are enlarged, they peel out very easily *en masse* without injuring the ejaculatory ducts.

A study of the last 243 consecutive cases of perineal prostatectomy performed at our clinic reveals the following facts. The average age was sixty-six; the youngest patient was fifty and the oldest eighty-six. Thirty cases were operated on between the ages of fifty and sixty, 59 between sixty and sixty-five, 78 between sixty-five and seventy, 54 between seventy and seventy-five, 16 between seventy-five and eighty, 2 eighty, 3 eighty-one, and 1 eighty-six. Thirty-two or 13.16 per cent of these were malignant. Vesical calculi were present in 15 or 6.17 per cent. Of this series there is one case of incontinence following total excision of a carcinomatous prostate, and one case of perineal fistula in a case of carcinoma where the wound closed for three months and reopened. This patient is now at the point of death from metastases two years after operation. The wounds in two other recent cases are not yet closed; one of these was a malignant case in which we used radium. We feel that these will close shortly following a recent curettage. With these exceptions, our results in this series have been very gratifying. During the period of time covered by this series, nine cases were either refused operation or died shortly after first seen. Four cases were sent home because of serious cardiac or kidney disease —one of these was seventy-five years of age, another eighty years old, a third ninety-one, while the fourth was ninety-three. Of the remaining 5, one died of pneumonia during the period of preliminary preparation while the other four were so uremic when first seen that they died of this condition within three to eight days.

Of the four deaths occurring in the series, the first was the eighty-fifth case operated upon and was apparently due to acute dilitation of the heart six hours after operation. The second was the one hundred and forty-fifth case and death was due to post-operative shock. The third death was the next case, the one hundred and forty-sixth, and was due to sepsis; the fourth or the one hundred and fifty-second case died of embolism on the eleventh day after operation. We have now operated upon ninety-two cases since we have had a death. This is the largest number of consecutive cases we have had in our work without a death. This is due to the fact that we have studied our cases more carefully each year from the laboratory standpoint as well as clinically. No patient is operated upon until his blood nitrogen and phthalein show the kidneys' function good. The blood pressure should be controlled at as near normal and stable a point as possible.

No patient should be operated upon following the withdrawal of the residual urine until he has completely recovered from the reaction which invariably follows this work. As a rule, the larger the amount

of residual, the greater the reaction following its withdrawal. Intermittent catheterization is a better method than the suprapubic puncture or the retention catheter as the pressure can be reduced gradually in this way. Sudden relief of pressure in chronic retention is dangerous. The reaction is usually greater in cases having a large amount of residual without infection than in those with infection and the time of preparation for operation in such cases is considerably longer. The patient with infection has already developed a certain amount of resistance which is necessary before operation.

The blood pressure, phthalein output and blood nitrogen should always be ascertained at the outset, for upon these decision must be made as to the time for operation. It is a well-established fact that the blood pressure and phthalein output both drop following the withdrawal of the residual urine. The nitrogen retained in the blood indicates the degree of impairment of renal function, and together with the phthalein output, gives a guide as to the length of the preoperative management of the case.

CONCLUSIONS

1. The removal of the prostate gland under sacral anesthesia may be done as a routine and this form of anesthesia certainly should be taken advantage of in cases where a general anesthetic would be dangerous.

2. Young's operation (or its modifications) for the removal of the prostate offers the best drainage possible, is followed with fewer complications, requires a shorter stay in the hospital, gives greater comfort to the patient, causes less fatalities and gives as good permanent results as the suprapubic operation.

3. A summary of these 243 cases shows sufficiently good results to justify us in continuing this technique and recommending it to others.

REFERENCE

(1) Crowell, A. J.: Modification of Young's perineal prostatectomy. Sou. Med. Jour., xv, 1. January, 1922, p. 45.

DISCUSSION

Dr. L. A. Crowell, Lincolnton: Dr. Crowell has asked me to discuss his paper. I know that his work is much better than it was ten or fifteen years ago. I remember fifteen years ago he and I operated on cases of this kind in the country and our mortality rate was fearful. I now know the cause of it. The secret of the whole thing was, and the secret of his success in his work at the present time lies in the preparation of the patient before operation. That is why his percentage is almost one hundred.

It is useless to argue with him for supra-pubic against perineal prostatectomy, but I cannot help believing that the supra-pubic operation done by men who do this work solely is a better operation than

perineal prostatectomy. The operative technique is, in my opinion, superior to the perineal operation. I have understood that supra-pubic cases are somewhat more troublesome to look after during their convalescence than are the perineal cases; however, men who are doing supra-pubic work entirely claim that this is untrue.

Dr. Greene, Chairman: Experience seems to show that in the hands of competent operators the same results are obtained from both perineal and supra-pubic methods. It has been advised, however, by those who are neutral, that the adenomatous types be removed supra-pubically and the fibrous types be removed perineally, because the former push toward the bladder as they are enlarged, and the latter toward the perineum.

Dr. ————————: I would like to ask Dr. Crowell this, whether he places any significance in getting the patient out of the recumbent position soon after the operation?

Dr. A. G. Brenizer, Charlotte: I do not do any prostates at all, so I ought to be able to talk a long time on this subject, but if my results were comparatively as good as Dr. Crowell's with perineal operations I would not touch pubic. Dr. Crowell's work is excellent. The patient lies up there and has no pain and seems to be pretty comfortable and come out with little disturbance. I am sure his results are good.

Dr. John Q. Myers, Charlotte: There is just one little point I would like to bring out—that is the danger of emptying a full bladder completely. I have done that ever since I was a school boy, and nearly everybody else does. The general practitioner goes in the country and catheterizes and does not get any bad results. I would like Dr. Crowell to tell us why he makes that statement, and why he thinks it a dangerous thing to do.

Dr. Crowell, closing the discussion: I would like to illustrate with some slides I have for that purpose.

Some one asked about the time for getting the patient out of bed following operation. We usually get them up in four or five days.

With regard to the relief of pressure. I think that most of the five cases which died in the course of preparation for operation were patients who were catheterized before coming into the hospital. I have seen hemorrhage follow the complete withdrawal of the urine in cases of considerable residual when the first urine withdrawn was entirely free from blood. This congestion is not limited to the bladder, but extends to the kidney as well, and occasionally is so great as to produce anuria.

SOME PRINCIPLES UNDERLYING SURGERY OF THE KIDNEY

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This is the day of physiological rather than strictly technical surgery. Present standards demand not alone a living patient but a comfortable and healthy patient. Organs are more or less interdependent and the technique employed must be in harmony with this fact. In the case of the kidney we are dealing with a vital and active structure whose behavior has a most profound effect upon the condition of the patient.

In approaching the subject of surgical lesions of this region a knowledge of the functional activity of each kidney is necessary; also the character and extent of the disturbance and what can be expected under palliative and under operative treatment. It must be decided whether the disease is unilateral or bilateral, the ureter free from obstruction from stones, strictures or kinks; whether both kidneys are present and what is the functional capacity of each. The surgeon likewise must be prepared to do any of the various operations as the incision may disclose the unexpected which may demand a variation in the technique decided upon beforehand.

It is fortunate that we have at hand several very efficient means with which to attack the above questions: namely, the X-ray, the cystoscope, the ureteral catheter, the blood urea, and the phenolphthalein test. In passing we may say that while the phenolphthalein test averages up fairly well with other methods and gives a very satisfactory measure of the functional activity of the kidney at the time it will not give the blood urea retention and while a patient may present a satisfactory functional test today he may be uremic tomorrow. The blood urea examination seems to be a more valuable prognostic method; moreover a uniform average in the phthalein output over a series of readings though a little low is more satisfactory than a fluctuation in the series with some points quite high.

The kidneys are the eliminating organs for circulating micro-organisms in the blood, and pyogemic bacteria may lodge in the kidney or may pass through its tissues and into adjacent structures. The sources are varied; focal infections such as dental abscesses, boils, felons, cholecystitis, tonsilitis, constitutional diseases as influenza, typhoid, etc. The organisms met with include colon, streptococcus, staphlococcus aureus and albus.

Infection of the kidney pelvis can as a rule be satisfactorily treated by rest in bed, diet, plenty of water, urinary antiseptics and by irrigations of the pelvis through the ureteral catheter. The results are uniformly good and often brilliant. If conservative measures fail to alleviate the symptoms and the patient shows signs of continuing and increasing sepsis there is likely an extension into the body of the kidney and a nephrotomy must be considered.

Pyelitis under certain conditions is a disease of grave menace. It is a dangerous complication of pregnancy and should be treated with promptness and vigor. If conservatism does not bring effective results and there are signs of a gradually increasing sepsis, nephrectomy is justified. If allowed to go on unrelieved the kidney may ultimately have to be sacrificed. Kelly advocates interruption of the pregnancy in the early months and nephrotomy in the late stages in such cases. Interference with the normal drainage from the kidney will result in gradual destruction of the parenchyma and the conversion of the organ into a mere pus sack. Such interference may come from stone, kinks and strictures of the ureter, or pressure from growths, etc. Partial or intermittent occlusion from any cause will result in a more extreme type of dilitation than a sudden and complete blockage. Where a diagnosis is made in the early stages the process may be checked by removal of the cause and re-establishment of the drainage. Small stones may be aided in their expulsion by dilitation of the ureter and strictures by the same method; where functional activity is low the destruction of secreting substance great or infections widespread, nephrotomy will be the method of choice. Plastic operations on the pelvis have not been satisfactory and have their fields of usefulness limited to the necessity for conserving all remaining renal tissue.

In cases complicated by infection with co-existing general sepsis, preliminary drainage will serve a valuable purpose relieving the more acute symptoms and as a preparation for final removal. If there be extensive involvement of the parenchyma on one side and a good functionating kidney opposite nephrectomy is the operation of choice. If the case be a neglected one preliminary drainage by nephrotomy may be done to relieve the drag on the sound kidney and free the patient from pain and sepsis; later a nephrectomy may be done. Preliminary drainage may some times be accomplished by an indwelling ureteral catheter.

Where the trouble is bilateral very gratifying results may follow drainage of one kidney at a time at suitable intervals after which nephrectomy may be done on the less serviceable side or if this involves too great a sacrifice of already badly depleted areas expectant treatment will have to suffice for the time being.

Rapidly progressing kidney infections such as acute fulmonating hemorrhagic kidney which is marked by sudden severe pain in the loins, tenderness, high fever, pus and blood in the urine calls for prompt nephrectomy. The exciting cause will be found to be some pre-existing focus of infection. The question of removal of stones from the kidney has occupied the attention of physicians since the days of Hyppocrates. The first authentic nephro-lithotomy was done by Marchetti in the days of Bernard. The X-ray by detecting renal calculi has cleared up many obscure symptoms and mistaken diagnoses. Since the introduction of the cystoscope many stones are removed from the ureter and pelvis which would otherwise require the knife. Expectant treatment is justified if the patient is fairly comfortable and the stone is of such a size as reasonably to be supposed to pa s.

An impacted stone even when small will grow larger, induce infection and become the source of great suffering and danger.

In removing kidney stones pyelotomy is the ideal procedure as the secreting renal structure is not injured thereby. If drainage is to follow to clear up infection a small tube may be introduced through a puncture in the kidney down to the pelvis and the pyelotomy wound can be sutured. This accomplishes the object with the least possible injury to the kidney. Pyelotomy has certain limitations. The stone must be small enough to pass through the wound without tearing the tissues at the hylum as troublesome hemorrhage may ensue. It is contraindicted where the kidney is tied down by inflammation and the pelvis covered by hardened fat. Large coral shaped irregular stones have to be removed by the nephrotomy route. They are generally associated with diffuse infection and destruction of tissue. Care and gentleness must be observed in their extraction. As little time as possible should be consumed, for shock and suppression of urine are always lurking near; with a good kidney on the other side nephrectomy offers the safest course.

Bilateral renal calculi are present in from 15% to 20% of all cases. Most urologists are in agreement with Watson that the better kidney should be attacked first. This rule must be modified at times; when infection is wide-spread expediency will dictate the removal by drainage of the more abundant source. Large branched long standing stones with infection in both sides presents a very grave situation. The patient's vitality is sapped and surgical effort must be cautiously undertaken. Preliminary nephrotomy of each kidney at proper intervals followed as the patient gains strength by removal of stones at separate sittings may prove the only safe course. During this period it will have to be determined whether it will be wise to do a nephrectomy on one side or make the best of what secreting tissue that has been left when all calculi are removed. The sutures for the control of hemorrhage must not be drawn too tight as this will induce further destruction of secreting tissue and may cause a late and fatal hemorrhage. Sometimes it is better to pack the wound around the drainage tube to control hemorrhage rather than risk further trauma from suture.

In brief our object should be to preserve the maximum of function with the least sacrifice of kidney tissue.

POLYCYSTIC KIDNEY

R. H. Crawford, B. S., M. D.

Rutherford Hospital, Rutherfordton

My interest and concern in the condition of polycystic kidney was aroused anew when there appeared at the Rutherford Hospital last fall a strong, healthy looking young man complaining of "blood in his urine and a fullness in his abdomen." While obtaining the family history the writer was amazed at the frequency in which the condition had occurred in various members of patient's family. Examination

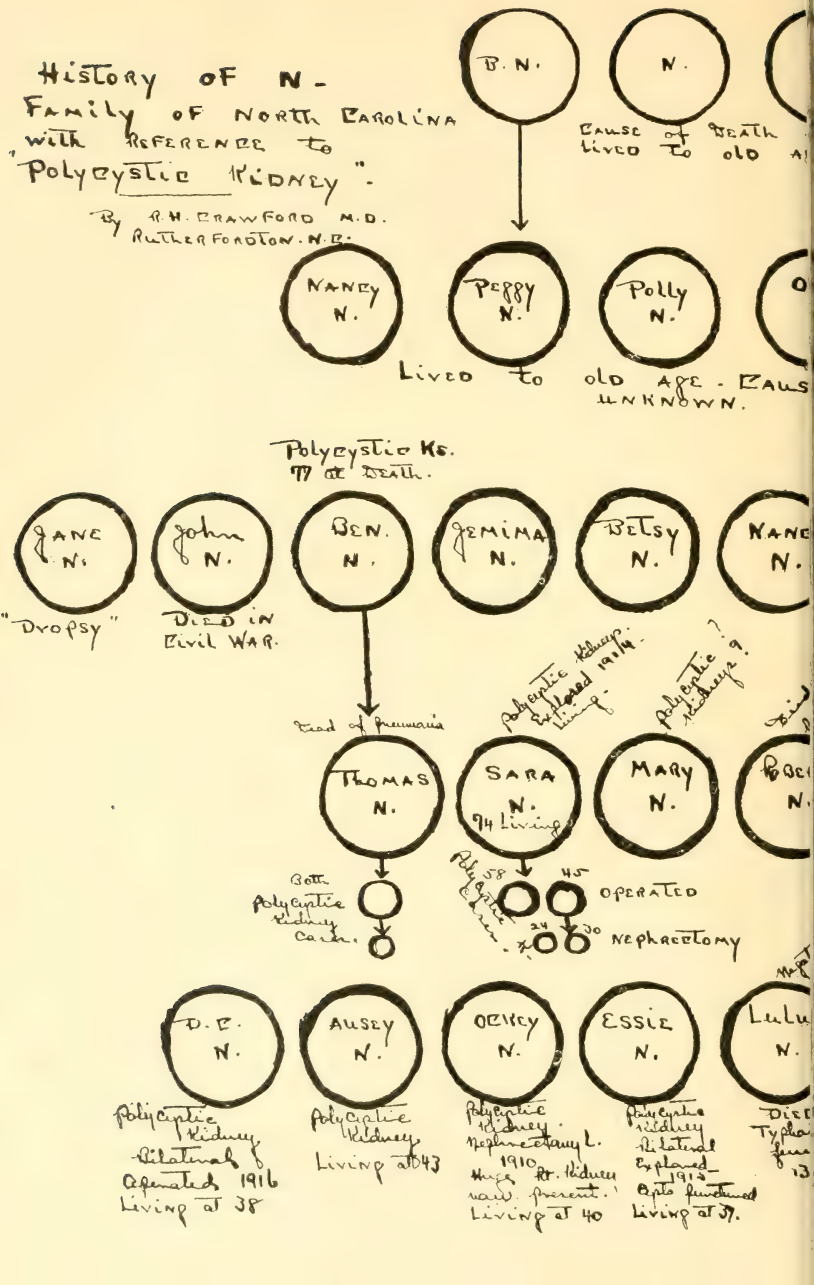
showed a robust young man, 34 years of age, a dentist by profession. He stated that for a number of years he was conscious of the fact that he had an abdominal tumor which increased slowly in size and that at varying intervals he noticed blood in his urine. The abdomen was markedly distended by a huge mass extending well down into the loins on the two sides—almost the entire abdomen was filled with the hard, firm tumor formation. By careful palpation one could distinguish two tumor masses practically meeting in the midline of the abdomen. The surface of the tumors was irregular, nodular but compressible. It appeared certain to the writer that he was dealing with a large bilateral kidney tumor—the exact nature of which could not be determined at preliminary examination. Bilateral polycystic kidney was suspected and a painstaking family history was obtained. The patient stated that a number of his brothers and sisters were affected with the same condition and he would have them come in for examination. With the aid of several members of the patient's family a complete history was obtained extending back for four generations. The origin of the family in America dates back to the time when four brothers from England emigrated to this country. One brother, B. N., married and had six children. The four brothers lived to be old men and the causative factor of their deaths is unknown. One of the six children, a son, John N., married and was the father of twelve children. He died supposedly of "alcoholism" but lived to an old age as did his brothers and sisters. One of the twelve children, Ben N., died at 77 years of age, apparently from an abdominal tumor. A sister died of dropsy; a brother was killed in the Civil War; another brother was drowned, while the cause of death in the others is unknown. Ben N. (mentioned above) is the first member of the family in which the condition of cystic kidney presents itself so far as known. He married and had seven children. One, a daughter, Sara, was explored and a diagnosis of "polycystic kidney" confirmed, she is living at 74 years of age. Three children of the seven died in uræmia following polycystic kidney. Each of the four with polycystic kidney married and the same condition appeared in their offspring in one or more instances and in the grand-children in two cases. One of the four, J. N., married and had nine children. His wife, the mother of my patient, is living and well at 60. J. N. was examined at the Rutherford Hospital in 1916 and a diagnosis of polycystic kidney made. He has since died. Eight of the nine children are living, one died at 13 with typhoid fever. The eldest is 43 and the youngest 20. Seven of these have been examined by the writer and six have easily palpable kidney tumors. The youngest apparently has no kidney involvement. D. N., age 38, was explored in 1916 and diagnosis of polycystic kidney confirmed.

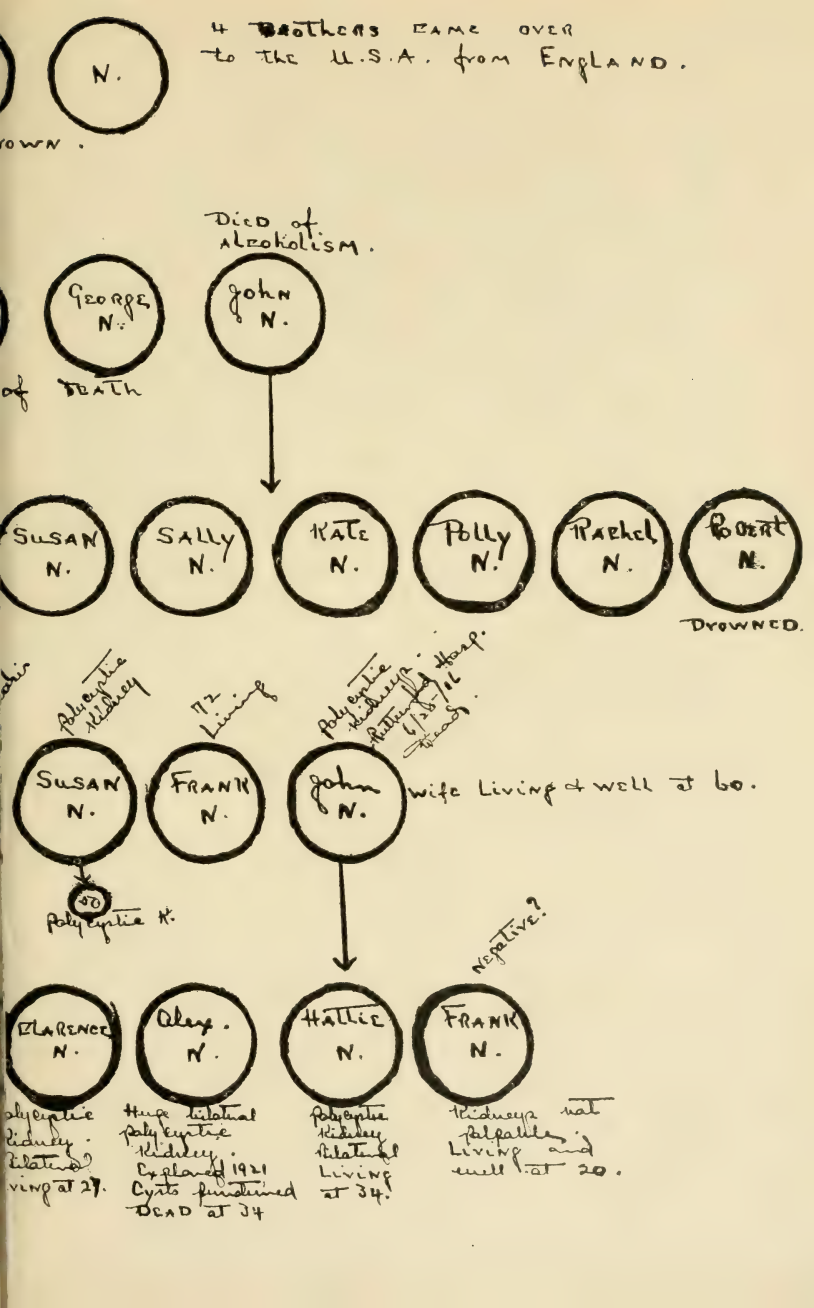
O. N. had a nephrectomy, left, performed in 1910 and at the present time there is a large tumor mass of the right kidney.

E. N. has a huge bilateral enlargement of the kidney. She was operated in 1915 and the cysts opened and drained. Out of a family of nine children, seven have easily palpable kidney tumors. In three of the cases the tumors can be readily detected through the clothing.

History of N- Family of North Carolina with reference to "Polycystic Kidney".

By R. H. Crawford M.D.
Rutherfordton. N.C.




4 Brothers came over to the U.S.A. from England.
N.
rown.
Died of Alcoholism.
George N.
John N.
of Death
Susan N.
Sally N.
Kate N.
Polly N.
Rachel N.
Robert N.
Drowned.
Polycystic Kidney
Susan N.
40
Polycystic K.
72 Living
Frank N.
Polycystic Kidneys Rattling 6/55/12 Heart Trouble
John N.
wife Living & well at 60.
Clarence N.
Polycystic Kidney. Bilateral
Living at 27.
Huge bilateral polycystic Kidney. England 1921 Cysts punctured Dead at 34
Alex. N.
Polycystic Kidney Bilateral Living at 34.
Hattie N.
Negative?
Frank N.
Kidneys not palpable Living and well at 20.

The urinary findings in my patient, A. N., admitted to the hospital, revealed a few R.B.C., numerous W.B.C., and a good trace of albumen. A diagnosis of bilateral polycystic kidney was made. The patient was very anxious that something be done to relieve the sense of fullness and discomfort in his abdomen and the hæmaturia which interfered with his usual efficiency. Following the technique of Hagner an exploratory incision and puncture of the cysts was advised and accepted. Under novocain anæsthesia a left rectus incision was made over the larger of the two masses. Two huge polycystic kidney tumors were found practically meeting in the midline of the abdomen and extending well down into the groin on the two sides. The cysts varied in size from a marble to an orange. A large cyst in the left kidney tumor was aspirated and the fluid content was of a clear amber color. The incision healed per primum but patient became weaker after operation and two weeks after return home died of uræmia.

In 1902, Osler recorded the fact that the condition occurred repeatedly in a family under his observation. Borelius of Stockholm (Nordiskt Med. Arkiv.) describes three cases in the same family: father, son and nephew. He believes all cases are hereditary. J. K. Love and Richmond report two cystic kidneys removed post mortem from a patient in whose family this peculiarity had repeatedly occurred. Flintermann describes the same condition in two sisters confirmed by autopsy findings.

The condition is comparatively rare. Preitz records of Kiel Institute found among 10,000 autopsies only 16 cases. Garceau found 10 cases in 2429 autopsy records of the Boston City Hospital. Sieber (Dtsch. Ztschr. f. Chir. 1905, LXXIX, 4b9) in a series of 198 collected cases found 116 females and 82 males. The majority of these cases occurred between ages of 40 and 60.

Luzzato ("La degenerazione Cistica dei reni," Venezia, 1900) in 226 cases found that 185 were bilateral. Sieber in his report of 150 autopsy records found that 140 were bilateral. That the disease is nearly always bilateral is well illustrated by its almost invariable recurrence in the opposite kidney after nephrectomy. Sieber noted in 39 cases of his series that cysts of the liver accompanied cystic kidneys.

Numerous theories have been advocated as to the pathogenesis of the condition. I shall mention three well known theories:

1. Embryonic. 2. New growth. 3. Inflammatory.

1. Huber G. C. (Am. J. Anat., 1904-5, IV, supplement, 17) states that in embryonic development a perfect union of the tubules has failed. The idea advocated by Shattuck and Bland-Sutton is in brief essentially that the wolfian bodies and the kidneys which in normal circumstances are distinct, become blended and through this failure of differentiation an abnormal kidney results with cystic formation. In fœtal and infant cases numerous malformations occur accompanying the cystic kidneys such as hare-lip, supernumerary fingers or toes, club feet, etc.

2. The theory that they are true new growths strongly supported by C. Nauwerck and K. Hufschmid (Beitr. Z. Path. Anat. U. Z. Allg. Path., Jean, 1893, XII, 19) is not held today. Malassoz first conceived the theory of new growth but Brigidi and Severi believed that the cyst contents were nothing more than the protoplasm of the epithelial cells fused together. They thought they could observe nuclear division of the cells and compared the affection to ovarian cystoma.

3. Virchow believed that the cysts were true retention cysts and that they resulted from occlusion of the urinary tubules in consequence of inflammation of the interstitial tissue in the papillæ of the kidney, a view now entirely abandoned.

SYMPTOMS

It is passing strange that many of these cases may go to the 3d or 4th decade without appreciable symptoms. Their attention may first be arrested by fullness and hardness in the abdomen. Others feel a sense of weight in the loins and complain of pain of varying character, perhaps renal colic at intervals. Hæmaturia occurs at irregular intervals and may clear up in a few days time or less, only to start again at a later date. The hæmaturia is probably caused by rupture of a cyst with bloody serum. A disturbing symptom is frequent urination with a total output for 24 hours larger than normal. In the later stages there are constitutional disturbances due to nephritis followed by gastric disorders and loss of weight. Usually there is secondary cardiac hypertrophy along with arteriosclerosis. A severe anæmia may intervene and with generally failing health the patient becomes progressively worse and dies of uræmia.

DIAGNOSIS

Tumor formation in one or both flanks having contour of kidney. If both kidneys are involved polycystic kidney is almost certain as this is practically the only tumor of kidney regularly of bilateral character. The tumors may obtain large size without any symptom. The tumors appear to grow antero—posteriorly but are irregular and nodular. The tumors extend well down into the flank on the two sides and may meet in the midline of the abdomen. The urinary findings may be negative but often contain R.B.C., W.B.C. and albumen.

Differentiation between hydronephrosis, pyonephrosis and hypernephroma can usually be made by ureteral catheterization. Functional tests of the kidney are helpful to determine the amount of tissue destruction in the kidneys, etc. The cysts are packed closely together and invade every portion of the kidney substance. The walls of the cysts are usually very thin and inside of them are sometimes seen the remains of septa which mark the places of coalescence of neighboring cysts. The fluid content appears in a variety of colors,

PROGNOSIS

The cases are poor operative risks if any such procedure is contemplated. Hagner, Lund and Rovsing report a series of cases in which the cysts were punctured and drained. The size of the tumors was decreased and patients made more comfortable temporarily. Nephrectomy has been performed many times when the remaining kidney appeared normal—but invariably a few years later the remaining kidney would become cystic, also.

Many cases live to a ripe old age without treatment—the majority, however, die about the 4th decade.

SUMMARY

Polycystic kidney is congenital and practically always bilateral. Cysts of the liver may accompany the condition. In fatal and infant life harelip, supernumerary fingers or toes, club-feet, etc., may be present along with cystic kidneys.

Heredity plays an important role and from my series of cases I venture the opinion that it is a familial affection.

Surgical interference may be adopted—the cysts opened and drained with temporary relief to the patient. Nephrectomy is not indicated even though one kidney appears normal, because the remaining kidney almost invariably becomes cystic.

The patients are poor operative risks. The majority of cases live to the 3d or 4th decade and many have no symptoms other than a sense of fullness and hardness in the abdomen. The tumors are slow growing formations and are rarely seen between infancy and eighteen years of age.

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DISCUSSION

Dr. N. D. Bitting, Durham: I wish to speak with reference to Dr. West's paper. I think the keynote in kidney surgery is conservatism. The more experience a surgeon has the fewer kidneys he will remove. He will obtain better results by co-operation and association with the cystoscopist.

Dr. Greene, Chairman: I quite agree with Dr. Bitting in that respect. Many kidneys heretofore removed could have been saved, unquestionably, and we ought to save as much as possible, because even a small amount will function. I have had some experience in that line myself. I remember one kidney I washed at least a gallon of fluid through in order to get it so it would drain itself through a No. 8 ureteral catheter. There was no urinary secretion from this kidney at the time, only pus. Free drainage of the renal pelvis, through dilitation of the ureter and lavage, reduced the capacity from 100 c.c. to 14 c.c. in eight months. That occurred during the eighth month of pregnancy, and the patient went to term in normal labor. A kidney will restore itself if given half a chance.

It is very easy to remove a kidney by the infra-capsular method, and it is a far less serious operation. You generally follow the drainage sinus, and with a finger pull back the capsule until the pedicle is exposed, of course draining your wound. It can frequently be done under local anesthetic. It is a simple operation.

Dr. Wm. M. Coppridge, Durham: I agree with Doctor Bitting and Doctor Green when they say that in the pregnant cases especially, a tremendous amount of good can be accomplished by ureteral catheterization and irrigation. In severe cases of pyelitis of pregnancy we are in the habit of leaving the catheters in the affected side for twenty-four to forty-eight hours. This will insure drainage and will almost invariably cause an abatement in temperature and other toxic symptoms. I think we should go very slowly in advising nephrectomy in these cases. We have not found one yet that would not respond to the treatment just outlined. As Doctor Bitting has just said the idea is to be very conservative in these cases.

In regard to Doctor Crawford's paper, I think that we should regard this as a real contribution to the literature on this subject. His having traced this case back through four generations certainly makes the paper one of the most complete that we will be able to find. I congratulate Doctor Crawford on his splendid effort.

Dr. A. G. Brenizer, Charlotte: I am sure we all enjoyed Dr. Crawford's paper and the abundant proof furnished. The curious thing to me is that with the polycystic kidney doing its part it will carry on to quite an old age without giving any particular discomfort except from its weight and size. An interesting thing is, if it is a congenital affair why it remains latent so long, but just those polycystic kidneys seem to resemble closely the polycystic kidneys you see

in infants. Dr. Crawford saw a case I had. It turned out not to be a polycystic kidney. Those kidneys are not always bilateral when seen. Eventually it is a bilateral condition. This man had a large cyst with one kidney involved. I had a baby with a mass on the side which pulled down the abdomen. This was a lympho-sarcoma, with a diagnosis likely of polycystic kidney. We did decide it was not, but we certainly gave polycystic kidneys close consideration. I think a great many of those cases will be explored, but if polycystic kidney, left alone.

Dr. J. D. Highsmith, Fayetteville: I would like to say in this connection that I have seen cases where the kidneys are badly infected pus kidneys where you give the phthalin intravenously and would wait for fifteen minutes and it would not appear and in these cases lavage of kidney pelvis plus constitutional treatment would eventually cause these kidneys to become pus and bacteria free and the phthalin output nearly normal.

Dr. West, closing the discussion: One word in closing. I had recently a very good example of what may occur and what danger the patient may be subjected to in a case of pyelitis. It was an old neglected case eight months pregnant that had become acute and we had a different problem before us. We tried all the conservative methods. We could not get the kidney to function properly and the patient was becoming very septic. Under local anæsthesia I placed a tube in the kidney and drained it with very happy ultimate results. The patient aborted four days later but made a complete recovery.

I have now under observation another case that came in about four weeks ago, with large stones in both kidneys, and both kidneys infected. One stone was so large and the kidney had so much pus in it that under local anæsthesia I instituted drainage. The stone there was blocking the pelvis. Three weeks later after the patient had become very much better and kidney functions very much improved I removed the large branched stone from the other side.

After the first operation the patient showed no profound disturbance but after the second, although it was done as quickly and gently as possible, she was for 12 hours threatened with suppression. I do not know what the outcome of that case will be. I have not decided just when or how I will proceed on the first drained but it looks like a case where, because of the large destruction of tissue on both sides, we have to save as much of the kidney structure as possible.

Dr. Crawford, closing the discussion: I want to emphasize one point, the occurrence of hæmaturia over a long period where it occurs at intervals and clears up of itself.

The only helpful surgical decision at point is following the technique of Rovsing and Hagner for exploring and puncturing the cysts as a temporary relief.

TUMORS OF THE MAMMARY GLAND

Numa D. Bitting, M. D., F. A. C. S., Durham

Tumors of the mammary gland, for the sake of more intelligent study and treatment, have both clinically and pathologically fallen into the benign and malignant classifications. Some eminent specialists have minimized the importance of dealing radically with the benign group, depending upon their diagnostic ability to determine which types may or may not undergo malignant degeneration. Certain clinical signs are definitely diagnostic of cancer when present, but these signs may not appear until the cancer has existed for some time. Just when a benign tumor begins to undergo malignant changes cannot be definitely stated, and it is oftentimes too late to relieve the patient when these positive signs appear.

As to the etiological factors producing breast lesions, but little can be positively stated. We have been able to trace a few growths to direct injury and infection. Pregnancy and lactation predispose to tumor formation, and tend to greatly aggravate existing breast lesions. Investigation of our records shows that the majority of growths mysteriously appear, and the patient accidentally discovers a lump in the breast. The menopause may play some part in the production of tumors, but, so far as we have been able to ascertain, no authorities have been able to prove the relationship. However, benign tumors are rare after the menopause, and malignant tumors are much more frequent.

Age has for a long time been regarded as an important factor in the diagnosis of breast tumors. It has seemed to have established a rather definite time, before which malignancy rarely occurs. In the majority of cases the tumor is benign before twenty-five years of age. In very rare instances, malignancy has been found to exist in the adolescent stage. Bloodgood reported a group of 885 malignant tumors in which 3.9 per cent were under thirty years of age, and only one case was as young as twenty-one years of age. The length of time a tumor has existed has no direct relation to the question of malignancy, and should not be taken as a guide. Tumors that have existed for many years and showed no signs of growth may quickly undergo malignant changes and rapidly advance beyond the curative stage.

The diagnosis of tumors of the mammary gland determines the plan of surgical procedure to be carried out in each individual case. To differentiate the benign from the malignant and the operable from the inoperable malignant growths is of great importance both to the patient and the surgeon. Benign tumors may be in some cases differentiated from malignant tumors by their clinical characteristics. They are usually, but not always, encapsulated and freely movable. There is no attachment to the skin nor retraction of the nipple. They are often multiple and occur early in life. Discharge from the nipple may be present but is not a constant sign. Pain may or may not be present.

Malignancy may be suspected when the tumor produces dimpling of the skin and retraction of the nipple; malignant tumors are usually fixed but may be movable when seen early and are non-encapsulated. They often infiltrate the surrounding tissues. Ulceration of the nipple, as in Paget's disease, when present, is a positive sign. The malignant tumor is usually single and rarely multiple. Enlargement of the axillary lymphatics should not be taken as a constant guide, as it is found in benign as well as malignant conditions. Besides, it cannot always be felt when associated with malignancy until late in the course of the disease.

Early diagnosis and early treatment of breast tumors are the points we wish to stress most. We do not share the belief of some surgeons that benign tumors can always be differentiated from malignant and that operation in the benign cases is not indicated. As soon as a tumor in the mammary gland is discovered the doctor should endeavor to determine whether it is benign or malignant. If the signs as above outlined point to cancer the radical operation should be performed at once. If the tumor appears to be innocent or of doubtful character it should be removed—not a portion of it but all of it, by clean dissection and studied by the frozen section method. Then, if beyond any reasonable doubt the tumor is innocent the incision may be closed with little or no mutilation of the breast. But if a small doubt exists as to the malignant character of the tumor, a stained section should be prepared and the diagnosis made by a competent pathologist as early as possible. If further doubt should exist the radical operation should be performed, because it is better to operate even a pre-cancerous lesion than to operate in the advanced stage of cancer with little hope of a cure.

Whenever cancer can be definitely diagnosed, the question of operability should be determined. The X-ray will aid greatly in ascertaining this fact. Metastases in the lungs, mediastinum, liver and diaphragm render the case hopelessly incurable. Palliative operation sometimes makes the patient more comfortable, and when this can be safely done is justifiable. Whenever patients who have reached the age of 21 years present themselves with a single tumor in one breast, operation is indicated. The function of the breast is not injured by excision of the tumor, and if the tumor is found to be benign the patient is protected by the removal of a pre-cancerous lesion. If, on the other hand, the growth proves to be malignant the radical operation must be performed while the disease is yet local, to produce a cure.

CONCLUSIONS

(1) Early recognition and early radical operation in malignant cases produce a higher percentage of cures and a lower percentage of morbidity.

(2) Whenever possible, it is better to operate in the pre-cancerous stage. This will result in practically no mortality or morbidity.

(3) Innocent tumors should be removed in toto by clean dissection. This precludes the probability of cancer development and produces little or no mutilation of the breast.

(4) Every woman who consults her physician about a lump in her breast should be advised and if necessary urged to submit to a thorough examination at an early date. The family physician will render his patients a great service by instructing them to report at once any tumor or lump they may discover in the breast.

EARLY DIAGNOSIS OF BREAST TUMORS

Jas. W. Gibbon, M. D., Charlotte

Fortunately, today one sees very little more of the classical textbook picture of carcinoma of the breast, namely, a large mass in the breast, attached anteriorly to the skin over a wide area, posteriorly fixed firmly to the muscles and chest wall, retraction of the nipple, and greatly enlarged glands in the axilla and above the clavicle. Everywhere it may be noted that cases of breast cancer are presenting themselves for treatment long before such extensive involvement has occurred. This is probably due to the persistent propaganda carried on by the American Society for the Control of Cancer during the past few years, culminating in cancer week so recently held. It is also probably due to a changed attitude of physicians towards all breast tumors. It is now common knowledge that every tumor of the breast is a potential cancer, and that many cancers originate in benign tumors, and no longer in the case of an undiagnosed tumor does one pursue the policy of "waiting to see what develops." This increased enlightenment of the laity regarding the character and manner of cancerous growths, and a lessened hesitation on the part of the physician in advising treatment or consultation in all cases has together tended to bring forward cases of cancer in its incipiency, and very early stages of development, much before the clinical signs of actual cancer can be demonstrated. In other words, we are seeing a steadily increasing number of "doubtful breast tumors," among which a considerable percentage will be benign, and the others, early and locally malignant. The first, require never any more than simply enucleation of the tumor, or excision, with a surrounding zone of breast tissue for a cure. The second, the early, locally malignant tumor without even the clinical signs of malignancy is the type of case in which immediate operation will promise the greatest possibility for a complete cure of the cancer. Many large clinics are reporting greater and greater number of cures following operation for cancer in these very early cases. We are encouraging this as the ideal method of attacking the destructive invasion of carcinoma of the breast, we are educating the public through various organizations to a knowledge of the fact that "cancer is not a hopeless disease, and that the earlier it is operated upon, the better the prognosis," and in so doing, we are multiplying the problems of diagnosis, and assuming a greater responsibility.

It is a fact also that we are seeing more cases of benign tumors of the breast than ever before, and because of the instruction of the laity regarding these lesions, and their significance. Formerly the percentage of carcinoma of the breast was given as 80% to 90% of all breast tumors. This is not true in the more recent statistics. Bloodgood gives the recent rise in percentage of benign breast tumors from 32% to 59%. Others give 30% to 35% as frequence of benign lesions.

It must now be obvious that the great need is a careful and more accurate plan of diagnosis. Benign lesions must be recognized if the patient is to be spared the ruthless mutilation and greater hazard of a radical operation for cancer, when only the simple operation is required. On the other hand, the cases of very early carcinoma must be diagnosed, lest the golden opportunity for cure is to be lost. Clinically the benign and early malignant tumors are quite similar, and the diagnosis by this method is not possible. These conditions may then be considered under the one caption, "clinically doubtful breast tumors," and it is in the diagnosis of these that there is greatest concern. After a review of the recent literature, and experience in the laboratory of surgical pathology, as well as the general practice of surgery, it seems to me that a really accurate diagnosis may be best reached after an associated study of the clinical features, macroscopic and microscopic characters of the tumor. It is therefore with the correlation of the findings from these that I offer as a plan of diagnosis.

Clinical symptoms, signs and age: Bloodgood in 885 cases of breast tumors has noted only one case of positive cancer in a woman below the age of 25. This patient was 21 and the tumor had been present but a few months. In a patient under 25 years, with a breast tumor, the chances of a malignant tumor are remote. After 25, age does not aid any for cancer has been observed from 26 to 70 years and over, as well as all types of benign tumors. Nor does advanced age necessarily indicate that the tumor is cancer. Quite recently we removed a large fibro-cyst-adenoma, a perfectly benign tumor, from the breast of a woman 60 years of age, which had been present for twenty years. During childhood tumors of the breast are unusual and benign, and need not be removed unless they grow or give great pain. At puberty benign conditions of the breast are often first observed. The attitude toward all lesions at this period should be conservative. Intense pain, a rapidly growing tumor, huge enlargements of one or both breasts are the only indications for operative interference.

Duration of the tumor is not as a rule of any great value. It might have been present a long time and only recently observed by the patient. Also a benign tumor may have been present for years and only very recently become malignant. What is perhaps of more value is the rate of growth. A rapidly growing or even slowly progressing tumor suggests carcinoma. The surgeon therefore may be aided to some extent by a history of long duration without any change in the size of the tumor. But this is only arbitrary, and no rule can be fixed. Cases of cancer have been reported with a history of a tumor in the breast as many as thirty years. (Bloodgood.)

Multiple Tumors in one Breast: In the majority of women with cancer of the breast, there is a single tumor. Cancer at the outset is commonly a single lesion. Multiple tumors in one breast argues against malignancy. On the other hand, benign tumors are sometimes multiple from the beginning. The most common multiple tumors are the simple cysts and the intra-canalicula myxoma (Bloodgood) and these of all benign tumors have the least tendency to become malignant. I have records of two cases of multiple tumors and each a fibro-adeneno-myxoma. Multiplicity, then while never a positive sign of benignity, when found with other strongly benign, characteristics may serve as confirmatory evidence.

The discovery of a lump is most commonly the first symptom to be noted. More rarely discharge of blood from the nipple, retraction of the nipple, dimpling of the skin, and grandular enlargements in the axilla are first observed.

Pain is said to be more frequently present in benign lesions than in malignant, and in all cases more or less unusual. Pain is not a sign of cancer, nor does it necessarily signify any grave lesion of the breast. Pain in one or both breasts precedes the menstrual period in some women, and at the cessation of the flow stops. A feeling of tingling in the breasts may be an early suggestion of pregnancy. Pain without a tumor is never an indication for operation.

Discharge of blood from the nipple has for a long time been taken to mean cancer. That this is not justified has been shown by many observers. This symptom therefore alone or with an associated tumor is not an indication for the radical operation. When associated with a tumor, the tumor has been more frequently a benign lesion, and the most common benign lesion causing discharge of blood from the nipple is the intra-cystic papilloma.

Retraction of the nipple is notoriously a sign of cancer, and at times may be the first thing noted. It is so exceedingly rare in benign conditions that it may be looked upon as almost a positive sign of malignancy. This is particularly true when there is no history of a previous mastitis, or abscess, and the retraction is not congenital. Retraction of the nipple may indicate cancer when no positive tumor can be palpated in the breast.

Dimpling and slight fixation of the skin are important signs of cancer. These may be so slight that they will escape observation unless specifically looked for. When present with or without a definite tumor, either one or the other are very suggestive of cancer. Dimpling of the skin was the first symptom to be noticed in one of our cases of scirrhus carcinoma.

Glandular Enlargement: The presence or absence of enlarged glands do not merit the diagnostic significance that is usually attached to them. In certain benign lesions of the breast the glands may be palpably enlarged. While in cancer there may be metastases to the glands of the axilla and yet no palpable enlargement. I have seen in cases of well developed cancer glands in the axillary fat which even after dissection and removal show no gross change, and yet under the

microscope show extensive infiltration with cancer cells. In a small number of cases of cancer of the breast the patient's attention has been called to the disease by nodules in the axilla, and the tumor in the breast was not felt until later. The involvement of the supraclavicular glands is a late occurrence.

The presence of a tumor in the breast is usually the first and most important sign or symptom, and should be enough to warn the patient to seek medical advice. Benign tumors are generally freely movable in all directions, are not attached to the skin, or chest wall, cause no dimpling of the skin, and no retraction of the nipple. In a case clinically cancer, there is no such freedom of movement, and one or more of these features may be present. The easily recognized cases of cancer are the late cases in which the prognosis is poorest. The type of cancer that we must be able to detect is the early, freely movable one, if the best results are to be obtained from the treatment. In other words, when the malignant tumor, so early as to simulate the benign lesion, can be recognized and radical treatment instituted, there is the greatest prospect of a complete and permanent cure. It is in the diagnosis then of these "clinically doubtful tumors," that I wish chiefly to call your attention. No one would wait in order for the tumor to develop sufficient characteristics to make a diagnosis; it is also a serious thing to do a radical amputation on every doubtful tumor of the breast, when probably a considerable number are benign and curable by a simple excision of the tumor, and still we should not like to lose the great opportunity of abolishing the disease by performing an incomplete operation when in reality the tumor is cancer. The clinical signs and symptoms have failed, and there is nothing left except the pathology of the tumor to solve the question, and settle the plan of treatment. It is exactly this that I wish to emphasize. The pathology of the tumor only in these circumstances can disclose the true nature of the lesion. Exploratory incision in these doubtful lesions must be employed. The surgeon then may inspect and examine the gross features of the tumor and if still there is any doubt a section may be removed, frozen and examined immediately under the microscope. The diagnosis then in nearly all cases is revealed and the indicated treatment continued. Davis remarks that the "ideal operation for breast cancer is the one that begins as an exploratory incision." Bloodgood states that "no woman should be subjected to an operation for a breast lesion, except for a lactation mastitis abscess, unless the surgeon is prepared to make the diagnosis at the exploratory incision and to perform the complete operation for cancer if indicated." If the lesion is cancer, the wound is carbolized and treated with alcohol to seal up the opened mouths of the lymphatics, the instruments and gloves are changed, and the radical operation performed. If the tumor is not cancer, either enucleation of this is done, or the tumor and a surrounding zone of breast tissue is excised. This method is superior to the older plan of excising a portion of the tumor for microscopic diagnosis and waiting two or three days before operation. There is less liability of stimulating lymphatic transference of cancer cells, when after the exploratory incision, immediate treatment is begun.

Exploratory Incision: Holding the tumor firmly between the fingers of the left hand, and drawing the skin tight over it, an incision is made directly over the tumor, radiating from the nipple. Hemorrhage is carefully controlled as it obscures the picture, and the incision carried directly down to the tumor. As the tumor is approached the behavior of the areola and breast tissue is critically observed. When the condition is benign the surrounding areola and breast tissue have a tendency to retract under the tension, and the tumor seems to pop into view. There is no adherence of the surrounding tissue to the tumor, there is a capsule, and it is usually possible to completely separate, or enucleate the tumor from the adjacent tissues. The borders and outlines of the tumor are clear and distinct from the rest of the breast tissue, and there is no difficulty in determining where the one ends and the other starts. These features are in marked contrast to those observed in cancer. In cancer there is no capsule, the tissue adjacent is firmly adherent and cannot possibly be separated, and as a result there is not the retraction of the tissue witnessed in the benign lesions. Strands from the tumor may be seen radiating and penetrating outward into the surrounding structures, and no line of strict demarkation can be found between the tumor and the other breast tissue. If necessary the incision may be carried on through the tumor and all of these features multiplied, and any degree of infiltration can be noted. The cut surface in the benign tumor is rubbery and has a tendency to bulge beyond the cut edge of the capsule. This is not true in the malignant tumor. Here the surface is granular, sometimes quite degenerated and some of the tumor substance can easily be scraped away.

If the tumor is cystic, the cyst is laid open, and the interior surface of the walls examined carefully. This is important because certain types of carcinoma develop from papilloma growing into the cyst cavity from the cyst wall. If the contents of the cyst are bloody, many surgeons consider it an indication of malignancy. If the contents are clear, and there are no papillary outgrowths, and the cyst presents a bluish color it is considered benign. A papillary cystadenoma should be inspected very minutely for signs of infiltration and carcinomatous changes, as it very readily develops into carcinoma, and really most frequently it is treated as a definite precancerous lesion, and the breast amputated.

When the diagnosis cannot be made from a study of the gross tumor at the operating table, a section is removed, frozen and immediately examined by a pathologist. In the majority of cases though, the surgeon familiar with the gross pathology of breast tumors can make the diagnosis, and proceed with the operation as indicated by this. In a smaller number of cases, the microscopical diagnosis is necessary, and it is only the very rare tumor which cannot be recognized fully by the association of these methods.

DISCUSSION

Dr. E. S. Bulluck, Wilmington: It appears to me that these gentlemen make an error in setting forth definite indications to determine whether the tumors should be simply removed or whether the removal should be radical. It occurs to me that it should be removed simply because it is a lump. Any lump in a woman's breast is either a cancer, or going to be a cancer, or could become a cancer, and the only way to avoid this possibility is to get it out. There may be some mutilation but it is in the interest of life. I doubt the propriety of opening a tumor to obtain a specimen, and I doubt the value of diagnosis made on frozen specimens when speedily examined by such men as are available to most of us to make the diagnosis. It occurs to me that a complete removal with a liberal portion of breast tissue for all tumors, with a radical operation upon the slightest suggestion of malignancy, is a course that would save most lives. Very few of us realize how high is the mortality from these operations. We operate on a patient, she gets well, goes away and we lose track of her and feel she is all right. In a letter from Dr. Bloodgood, who probably keeps his statistics better than any other surgeon, certainly in our country, possibly in the world, he states that in his own practice over a long period of years, in the removal of breast tumors, in which microscopic study showed no involvement of the maxillary glands, that five years after the operation only 30% of these women were living. The reason that the diagnosis is not made as the actual cause of death is that the recurrences are seldom in the skin. These patients become debilitated and die of other diseases. It seems that the only course to follow in order to save the largest number of lives is to remove every lump and to remove it radically and very promptly.

Dr. B. C. Willis, Rocky Mount: I was very much interested in the papers and think they are most excellent. I would like to emphasize a few points Dr. Bulluck brought out, that I believe all tumors of the breast are potential cancers and if we leave them long enough we shall have cancer.

Another point I wish to bring out is the frequent examination of tumors of the breast, that is massaging and trying to locate where they are attached and whether or not they are malignant, before operation. I agree with Dr. Bulluck that these tumors should be removed in mass with the surrounding tissue. The idea that every surgeon should be a pathologist is a good one when he is operating on the breast, and he should have the equipment to make immediate examination, because we can have sins of omission and sins of commission. In the past, surgery, I think, has had more sins of omission. Only two cases have I ever had in which you could say that the lesion was the size of one centimeter in diameter in looking at them in microscopic section. This pernicious habit of cutting into tumors and waiting on diagnosis two or three days, as condemned by these gentlemen, is certainly correct. We ought to suppress it.

The general practitioner should not wait to see that there is any enlargement of the glands. We have had cases referred to us in which they say, "I have been watching this tumor for some time to see if it is malignant, and I feel now it is malignant, and it is time for the surgeon to take over the case." Then it is too late. He has watched his patient to preach his funeral.

The early operation is better than a most radical operation when we have glandular involvement.

I believe all cases suspected to have cancer should be treated with X-ray and then wait 48 to 72 hours after the treatment so that the lymphatic system is closed up before instituting operative procedure.

Radium should be used too in these cases after removal of malignant conditions, especially if you have glandular involvement in the axilla. After removal, you leave your radium in for a short time, moving it every two hours and of course these patients should be treated with X-ray following operation.

Dr. Greene, Chairman: This rule for removing all lumps from the breast was first advocated by Dr. Tiffany, of Baltimore, somewhere in the '90s. He regarded all lumps in the breast as incipiently malignant, and laid down that rather radical rule that early. It is the one we are following today very largely. I quite agree with what Dr. Bulluck had to say. I will ask Dr. Bitting to close the discussion.

Dr. Bitting, closing the discussion: I have not very much to add. The purpose of my paper is not to go into any detailed methods of treatment, or to discuss the pros and cons in any way, but simply to outline a few guiding principles to make a safe play. I believe in the safe play rather than the grandstand play, so to speak, and so far as I can understand the discussion, and I appreciate the free and frank expressions, they are exactly the position I take in my paper, only they come to it in a different way. They see it from one angle and I see it from another. I want to reiterate, lest I might have been misunderstood, that I do not practice cutting into a tumor in the breast if I suspect there is malignancy; in fact, I do not cut into the tumor at all, but go sufficiently wide of the tumor, if I think it is benign, to cut it out without unnecessary mutilation of the breast, but if I am doubtful about it and do not want to do a radical operation, then I go still wider, even though I may mutilate the breast tissue, and get my frozen section report. And if there is doubt, then get the stained section report as early as possible by expert pathologists, and if there is still a small doubt, in order to make the safe play, and save the life of the patient, do the radical operation.

So far as lumps in the breast are concerned, we regard them all in the same light; every man who has spoken about it simply approached the subject from a different angle, but the subject matter underlying what he has to say is identical.

I did not intend to go into the treatment because my paper did not touch on that except simply to outline certain treatments. I find a great deal is being said and done along the line of the use of radium

and X-ray before operation preparatory, and then post operative, all of which I believe in most heartily, if you are sure time will permit, but the one point I want to stress is this, that every tumor, as just said, is potentially malignant or may become so at some time. It does not belong there, it is an abnormal condition, then you render the life of your patient much safer by removing the tumor, and second, if it becomes malignant, at the earliest moment you can determine that, do the radical operation. That will offer the next best percentage of cures.

I think the most important point of all I can bring out is simply a repetition, that women ought to be instructed, as soon as they discover a lump, if no larger than an ordinary pea, to have it investigated. Dr. Willis' point is well taken, about undue manipulation and massage. Of course I had no reference to that, but I meant by detailed and complete examination to try to determine what you have to deal with and then proceed with the remedy. The women should be educated to have these examinations and the trouble located if possible and then the remedy applied. The family physician is closer to the patients and sees them many times long before the surgeon and can be of great help in bringing about this detailed and careful examination, and get the patient out of danger by immediate removal.

Dr. Gibbon, closing the discussion: The idea that I wished to convey in the presentation of my paper was that owing to the increased education of the laity in regard to these tumors, we are seeing a very large number of doubtful breast tumors, in which it is a matter of some difficulty to separate those of early cancer from the benign lesion, and this very obviously requires a method of more active diagnosis if we are to choose the proper type of operation. In cases of doubtful breast lesions, as everyone knows, the history and clinical signs are often insufficient in arriving at a diagnosis; therefore, to fulfil a positive need, I have suggested a plan of making a diagnosis at the operating table from the gross pathology of the tumor. I would like to add that this method is one followed in most of the large clinics of the country in cases where the diagnosis cannot be made before the operation. The plan I have given is one original with Dr. Bloodgood of Baltimore. There seems to be from the discussion of this paper some difference of opinion regarding this plan of procedure, but in the cases followed and reported where this has been done, no harm has been seen to follow. The plan naturally requires an accurate familiarity of the surgeon with pathology of breast lesions. I would never be led to believe that in cases of doubtful breast tumor the thing to do was to go ahead and do a complete operation for cancer, when there is a strong probability that the lesion be benign and amenable to very much simpler forms of treatment.

I appreciated the discussion and found it very interesting.

Dr. Greene, Chairman: These two papers and the discussion have brought out two facts, that is, that we are all very keen for early treatment of breast growths, and I believe most of us realize the necessity of early diagnosis and early removal of these breast knots.

THE NECESSITY FOR THE DETERMINATION OF THE ORIGIN OF JAUNDICE BEFORE SURGICAL TREATMENT

Drs. D. W. and Ernest S. Bulluck and R. H. Davis
Wilmington

While agreeing that all jaundice is not due to hepatic obstruction, most of us are inclined to assume this as a working hypothesis, in the study of this symptom. We fail to realize that the gall bladder and the ducts are but the excretory tubes for substances arising in the abdominal organs, treating as primary conditions the terminal states that result from morbid activities on the part of the vicera. This is illustrated by Mayo's report that sixty per cent of the cases splenectomized for hemolytic jaundice also had gall stones.

Investigations are revealing that the various types of hematogenous jaundice-hemolytic jaundice, Hamot's disease, spleenic anemia, and pernicious anemia—are more frequently encountered than was previously supposed. Discarding systemic infections, intoxications, poisons and other conditions in which the hepatic parenchama is directly affected, *the hemolytic complex causes most of the jaundice relegated to our care.* Only a small percentage of the cases show the severe crises and white stools of empyema of the gall bladder or obstruction of the common duct. Applied to such cases the present surgical views are certainly correct. However it should be borne in mind that the recurrent hepatic crisis of hemolytic jaundice is accompanied by pain and tenderness in the epigastrium, tenderness and enlargement of the liver, temperature and leucocytosis, symptomatically the difference seems to hang on the white stools and these are found only in the more complete obstructions. When no obstruction can be demonstrated, the supposition that a stone may be lodged in the ducts within the liver is hardly tenable, since McMaster and Rous have shown that more than three-fourths the liver in the dog or monkey may be put in stasis without tissue icterus, showing that a small part of the organ can function for the whole.

The so-called catarrhal jaundice does not seem to be due to an inflammatory edema that obstructs the Ampula of Vater, as classically described. In these cases we find that the simple insertion of the Lyon's Duodenal tube delivers an excess of bile. Cases who are operated, the gall bladder found to be normal and the appendix removed on suspicion belong to this hematogenic group, as do these cases who refuse operation and never have recurrences. A similar origin is suggested when jaundice and anemia suggest a possible malignancy that cannot be located. Such a case recently autopsied showed the most intense pigmentation of the tissues with no demonstrable lesion except an enlarged spleen. When jaundice persists or recurs after the removal of stones, the supposition is that one might have escaped removal, but secondary operations are seldom done, and the patient generally clears up. In such instances the post operative jaundice was but

the persistence of the original hemotogenic condition, the stones being merely the result of previous attacks and resulting not so often from local infection as from faulty hepatic metabolism, resulting in a concentration of the bile and a high Cholestrin content. If, however, the colon bacillus complicates the typical surgical gall bladder develops. The recurrence of hemotogenous jaundice offers a plausible explanation when the return of this symptom is thought to be due to kinking or stricture of the common duct by the contraction of adhesions. This may seem to be an academic explanation, in which the frequency of hematogenous jaundice is over-estimated, but when we remember that most cases of jaundice yield excessive quantities of bile from the duodenum and that sixty per cent of hemolytic icterus may show gall stones, the possibility of confusion becomes more evident. If true obstruction exists or severe infection or retention in the gall bladder are encountered, these must unquestionably be treated in the usual way, but this does not apply to mild cases of jaundice with brown stools, bile in the duodenum, increased *fragility* of the red cells and urobilin in the urine.

Jaundice may be obstructive or hematogenous and its treatment should depend upon the source. Our experience with Lyon's tube has been that in most cases of jaundice an excess of bile is delivered from the duodenum. The bilirubin from this is converted by normal agencies into urobilin, which when in excessive amounts, is absorbed from the digestive tract, carried through the portal to the general circulation and eliminated by the kidneys. The presence of this substance therefore indicates that the jaundice is not obstructive. Increased *fragility* of the red cells indicates that the origin of the disease is in the spleen.

It seems that we are gradually loosing the liver, that the routine use of the duodenal tube and tests for *fragility* and urobilinuria will prevent the removal of the gall bladder when it should have been the spleen, or from draining it when this can be accomplished without adhesions or mortality, by the duodenal tube.

We believe that if jaundice patients with brown stools are referred to our medical colleagues for *extended* study and treatment, their recovery will be accelerated, the frequency of operation lessened and by the early medical drainage of the gall bladder and ducts, many patients will never reach the neglected terminal stage when severe infection or obstruction converts them into true surgical cases.

DISCUSSION

Dr. D. Heath Nisbet, Charlotte: I was glad to hear Dr. Bulluck relative to the duodenal tube; I think we might prevent some of these late stages of gall bladder trouble by its use. While there is a good deal of discussion as to whether the bile we get is from the gall bladder, it seems it has been proved by a number of good men, and that is just one of the things that the duodenal tube is aimed at, is to prevent the later gall stone trouble. Of course the method has not been in use

long enough to say definitely what it will do in that line, but it certainly looks as if it will relieve biliary stasis and prevent infection, and we are going to learn more and more about the liver as time goes on. In catarrhal jaundice it is the method of choice. The repeated stimulation of the duodenum with magnesium sulphate will in time remove the obstruction and the drainage is free and complete.

Dr. K.-P. Neal, Raleigh: I would like to express my appreciation and pleasure at hearing this paper, because I think it lends a light and shows the too radical tendency of present day surgeons to assume that all causes of jaundice are mechanical; and we are too prone to adopt the old saying, "I don't know what it is, but we will open up and find out." It has justly been said that surgeons do not study their cases as thoroughly and as long as medical men and the operative form of diagnosis is too often resorted to.

I think this paper, if it does nothing else, is well worth while to teach us to be more conservative in our treatment of jaundice.

Dr. J. A. Dimmette, Gastonia: As a general practitioner for seventeen years, I want to add this remark, that in the South hookworm causes about as much jaundice as gall stone, and I hesitate to take the patient to a surgeon for an operation without examining the stools and a complete blood examination. I invariably do a blood count and Wassermann for my own benefit as well as my patient's in all these cases. Experience has taught me that you can not be too careful in making a concise diagnosis before subjecting a patient to an operation, let it be major or minor. The old adage, "Once under the surgeon's knife, always under it," holds true in this character of patients, equally as much as in any other class that a surgeon has to contend with on account of the weakened vitality of the patient before he will consent to operation, in case he or she has to undergo same, and a number of complications are always to be expected in operative cases.

Dr. Bulluck, closing the discussion: I certainly appreciate the discussion of these gentlemen, as to whether the Lyon's duodenal tube will drain the gall bladder or not. It will certainly drain the liver. Reports of experiments carried out under local anesthesia, when the abdomen is opened for unrelated conditions, show that the introduction of magnesium sulphate will cause an evacuation of the gall bladder and that the biliary tracts may subsequently be drained by the procedure of Lyon.

I took occasion to go and see Dr. Lyon and study his work and I believe that those men who would do so in passing through Philadelphia, would feel a great deal more committed to the duodenum tube than they are now.

REPORT OF CASE OF ACUTE OSTEOMYELITIS OF ISCHIUM

A. DE T. VALK, M. D., F. A. C. S., WINSTON-SALEM

In general there is very little to be added to what is known as to the diagnosis and treatment of acute osteomyelitis although in many instances these cases present themselves in rather bizarre forms, deviating from the ordinary in such way that they may be somewhat confusing for a time.

This condition should really come under the domain of the orthopædic surgeon and in the chronic stage frequently falls to his lot. In the acute stage, however, such cases are most often seen by the medical man and in the majority of instances the prognosis is directly dependent upon just how much later the patient is seen by the surgeon and operative interference instituted. This fact can not be emphasized too strongly and while the time between diagnosis and surgical interference is important in all cases of acute osteomyelitis, this is a most important factor in infancy and early childhood and as previously mentioned may determine the prognosis absolutely.

In fact these cases are surgical from the onset and the only medical aspect is that of supportive measures, if necessary, until operative treatment can be established. Further there is probably no condition confronting the surgeon that demands earlier recognition and operative measures than this type of infection.

Mistaken diagnosis is not uncommon and is the most frequent error in management of such cases. In children where the infection often starts in the epiphysis, the erroneous diagnosis of arthritis is sometimes made and is treated for such with pathetic results.

There is no discrepancy among us as to the operative procedure in acute osteomyelitis—primarily being one of drainage, the extent of which being governed by the stage of the disease as well as the general condition of the patient.

Recently Geist (A. M. A.—Dec. 17, 1921) reported six cases of osteomyelitis of the pelvic bones, all of which were subacute or chronic. He stated that comparatively few case reports of this condition appear in the literature—less than forty cases having been compiled by Bergman in reporting a case of osteomyelitis of the ilium. No doubt osteomyelitis of the pelvic bones exists more often than the literature on the subject would lead one to believe though few case reports have been made

As a rule there is very little interest in reporting isolated cases but these cases being somewhat infrequent in occurrence as compared to the general run of osteomyelitis, the writer thought it might be interesting to report the following case.

REPORT OF CASE

B. P., male, white, age 16. Referred by Dr. Reece of Elkin, N. C., and admitted to the hospital Sept. 26, 1921, complaining of severe pain in right hip and leg. F. H., unimportant. P. H., usual diseases of childhood. No serious illness. C. R.,

negative. G. I., an attack of pain in right flank five years ago, lasting several days. In bed with same but not accompanied by nausea or vomiting. Slight elevation of temperature. No recurrence. G. U., negative. No history of injury. Present illness began four days previous to admission to hospital. First noticed indefinite pain and numbness in region of right hip, radiating down leg to knee. Within a few hours the pain became quite severe and more intense as time went on. Within twenty-four hours the pain was more or less localized in region of right hip and gluteal area. Radiation of pain persisted on attempted motion. Temperature ranged between 101 and 104 from onset with a rapid pulse, between 130 and 140. No chills. There was acute abdominal tenderness with a moderate distension but no nausea or vomiting. No urinary disturbance.

Examination revealed a fairly well nourished boy, apparently quite ill. Face flushed, tongue coated and dry. Throat negative. Temperature 104. Pulse 140 and of fair vol. Resp. 26. Thorax well formed and heart and lungs clear. Abdomen slightly scaphoid with both recti held rigidly and general abdominal tenderness. Inguinal regions and genitalia negative.

Extremities other than right leg, negative. This flexed on body with marked muscle spasm about hip. There existed definite swelling and tenderness about right hip and upper third of thigh. The entire right gluteal region was somewhat swollen and tender which seemed more marked along gluteal fold. The point of greatest tenderness, however, was just over and posterior to the head of the femur though the whole region was so exquisitely tender that examination was unsatisfactory. Urine showed trace of albumin and leucocyte count 18,000.

The X-ray did not reveal anything definite as to hip joint, pelvis or head of femur, the latter being suspected as being the seat of trouble.

Assuming that we were dealing with an acute osteomyelitis, an exploratory incision, under nitrous oxide anæsthesia, was made over the head of femur which was found to be quite negative although the tissues in this region were œdematous. The incision was enlarged posteriorly toward the ischial tuberosity and on further exploration by blunt dissection, pus was encountered just beneath the gluteal muscle which was apparently arising from the region of the ischium. The patient's condition did not justify further exploration so that the wound was partially closed with two cigarette drains to ischial region. Rectal examination under anæsthetic revealed only a moderate amount of thickening in region of right ischium.

Post-operative course in this case was rather stormy for several days with an irregular temperature between 101 and 103. The drainage was profuse and motion of hip gradually improved though as time went on it was apparent that drainage was inadequate as was shown by the persistent elevation of temperature and general appearance of patient.

Rœntgenogram at this time—15 days after operation—showed beginning distruction of ramus of ischium.

Under nitrous oxide anæsthesia a small opening was made just to outer side of tuberosity of ischium to facilitate drainage. Subsequent to this there was immediate drop in temperature and a most decided improvement in general condition of patient.

Rœntgenogram taken thirty-four days after admission showed almost complete distruction of the entire ramus of ischium with that characteristic mottled, moth-eaten appearance of the bone.

At this time the patient was again operated upon and a sequestrum of almost the entire ramus removed. The post-operative course was uneventful and patient was discharged from hospital on Nov. 21, 1921, with good motion of hip-joint and wound practically healed.

A recent report from this patient stated that he was walking with aid of cane and wound completely healed.

DISCUSSION

Dr. Greene, Chairman: I would like for the doctor in closing the discussion to bring out whether there was any injury or blow, or whether there was infection of the teeth.

Dr. O. L. Miller, Gastonia: I think the doctor is to be congratulated and complimented that the result was good. I believe he refers to Dr. Geist, of Minneapolis. In the report which Dr. Geist brought out recently there are few cases of successfully handled osteomyelitic infections of the ilium. In a rather large experience of seeing bone infection I never saw an acute osteomyelitis of the ischium until within the last nine months, and in that time I have seen three cases. The first came on with a violent infection of the ilium and in spite of all the drainage the child died. In the other two cases we got out better, but it is a very treacherous situation.

Early open drainage, as the doctor brought out, is the secret. It is treacherous, in that you are so likely to mix it with hip joint infections, when all the time the patient has an osteomyelitis. So I think the paper is very timely.

Dr. Valk, closing the discussion: I appreciate the discussion. As I mentioned in the paper there was no history of infection or injury. There was no focus of infection that could be made out at the time when first seen.

FURTHER OBSERVATION OF HEART MASSAGE AS A FINAL RESORT FOR RESUSCITATING HEARTS FAILING UNDER GENERAL ANESTHESIA

T. C. Bost, M. D., Charlotte

The expression, heart massage, in its surgical meaning implies intermittent compression or kneading of the organ, and has for its object the re-establishment of cardiac action which has failed, as during the progress of a surgical operation or while the patient is under the influence of a general anæsthetic.

A word as to the physiology of the heart might not here be out of place, and in this connection the question might naturally arise, why does the heart stop? It is equally pertinent to ask, why does the heart beat? The prevailing opinion leans toward the myogenic theory, which holds contractility to be an inherent function of the cardiac

muscle and the one fact that stands out pre-eminently is that the greatest rhythmic power resides in the basal portion of the heart, that is, in what corresponds in the more primitive hearts to the sinus venosus.

From a surgical standpoint the failure of the heart in the majority of instances may be accounted for by: reflex vagus inhibition and the action of the toxines from the anaesthetic and other sources directly upon the heart muscle.

Heart massage according to Keen (1), D'Halluin (2) and recently Gunn (3), favors resuscitation by: (a) Depletion. Emptying mechanically the cardiac chambers; (b) As a mechanical irritant, stimulating the reserve energy of the cardiac muscle; (c) Creating an artificial circulation which keeps up the nutrition of the myocardium, and supplies fresh blood to the brain. Physiologists have put great emphasis on the value of artificial circulation. Of these, notably Gunn, who injected a dye in a peripheral vein and detected it in a peripheral artery after a few compressions of an arrested heart, thus establishing its value. Zezas (4) attributes to the artificial circulation the success of heart massage.

Massage, as a practical means of treatment in cases of failure of the pulse and respiration, especially those occurring during general anaesthesia, is based not only upon a series of physiologic experiments, but upon clinical evidence as well.

The experiments began with the work of Schiff (5) in 1874. He showed by chloroforming a number of dogs until the heart ceased to beat that artificial respiration and stimulation by electricity were of no avail, but that massage directly applied restored cardiac action after an interval of eleven and a half minutes. Tuffier and Hallion (6) communicated a similar series confirming this work. In 1900 Prus (7) published the results of experiments performed by him on 100 dogs, killed by electricity, by suffocation and by administration of chloroform. Heart massage and artificial respiration were started in periods varying from 55 seconds to one hour. Of those in which the heart was arrested by electricity, massage was successful in fourteen per cent; while in the others, over seventy-five per cent were resuscitated. Prus concludes that life can be induced to return even after the heart has ceased to beat for one hour. Provost and Balleti (8) in animal experimentation concluded that fibrillary twitchings of the heart muscle were the greatest bar to successful massage, and showed that the longer the time which elapsed between the stoppage of the heart and the beginning of the massage, the greater was the probability of these twitchings appearing. White (9) in 1909 was unable to restore either respiration or circulation by artificial respiration alone, even by inflating the lungs with a bellows after the heart had ceased. The work of Crile & Dolley (10) pointed out the fact that artificial respiration and cardiac massage should be carried out simultaneously.

This extraordinary power of the heart to regain its function after apparent death under certain physiologic conditions is well known to the laboratory worker in the field of heart massage.

The first report of massage of the human heart was made in 1898 and the first successful case was as late as 1902 by Starling and Lane (11), so that as a therapeutic measure heart massage may be considered of fairly recent application.

Green (12) reviewed the literature in 1906 and gave an abstract of forty published cases. White (9) collected an additional ten in 1909 making a total of fifty cases.

I have searched the literature very carefully and have collected twenty-five more cases, making a total of seventy-five, including the two here cited.

The methods employed have undergone considerable evolution:

1. The thoracic route. A flap of the thoracic wall over the cardiac area is cut and turned back. This procedure is necessarily forcible and must accentuate shock, as many intercostal vessels and nerves are involved. Pneumothorax, too, has occurred in several of the published cases, and it is not surprising that the method has been abandoned, except in operations on the heart and lungs, in which a breach in the thoracic wall has already been made.

2. The abdominal subdiaphragmatic route. A median line epigastric incision is made and the right hand introduced below the diaphragm and the left placed over the cardiac area, interposing the heart between. This method has been most generally used, as it was a most natural thought when the heart action was arrested during the progress of a laparotomy, and when promptly done the conditions were favorable for resuscitation. It is the facility and the promptitude that secure success. It has been demonstrated, in a child, whose thorax is small and tissues elastic, that subdiaphragmatic compression of the heart is possible though difficult, but in the adult it would rarely be effective, in the obstinate case, as only the apex can be reached making it impossible to empty the distended cardiac chambers or massage the base of the heart where the greatest rhythmic power resides. Thus the need for the transdiaphragmatic to reach the base, when this method fails.

3. The abdominal transdiaphragmatic route. In this method a median line epigastric incision is also made and the diaphragm is incised approximately antero-posterior, splitting the muscle fibers and gaining direct access to the pericardium. Contractions of the heart have been thus produced in practically all the cases however late applied, as for example, Green's case (12), in which an hour after apparent death he incised the diaphragm and was able to produce a few contractions. While this method affords direct cardiac massage and is superior to the thoracic, yet it is objectionable in that it is a very difficult procedure. The stomach and left lobe of the liver handicap the incision of the diaphragm. There is also some risk of injury to musculo-phrenic artery, which may cause concealed hemorrhage. Suturing of the opening in the pericardium and diaphragm is as difficult as it is necessary. Hence the advantage of the author's technique as worked out on a cadaver and applied in two cases

4. Author's method. An abdominal incision is made in the median line extending well up to the ensiform cartilage. The left costal cartilages are well retracted, bringing the anterior diaphragmatic insertion well into view. A two inch incision beginning one inch to the left of the median line, carried outward behind the costal margin, cuts the fibers of the diaphragm near their insertion. The opening is rapidly dilated with two or three fingers of the right hand, so that the hand can be passed into the thoracic cavity, and the base of the heart effectively massaged. No vessels are injured in this incision, as the superior epigastric artery is to the inner side and the musculophrenic branch enters the diaphragm deeper than the incision. The liver and stomach, even if prominent, offer no obstruction to this route; nor is the pericardium in risk of being opened. During the massage the parts fit snugly around the wrist of the operator so that air is not sucked in, and there is no tendency to collapse of the lungs. The incision is easily closed and made airtight with a continuous cat-gut suture.

As to the technique for doing massage, it is pretty well agreed that this should be gentle compression of the heart at about half its normal rate to allow the heart to fill well, also this is in keeping with the rate at which the heart will start, which has been shown to be always slow. When the heart starts massage should be stopped to allow it to regain tone and establish itself of its own accord, or at most only compressing the heart occasionally.

REPORT OF CASES

Mrs. H., age 38, had one child age 6; entered Presbyterian Hospital May 10, 1921, complaining of pain in lower abdomen of five years duration, also irregular menstrual bleeding for past year. Examination revealed slight local tenderness in lower abdomen and on pelvic examination uterus was irregular, about three times the normal size, and a small movable mass could be palpated on the right side. Physical examination of lungs and heart negative. Urinalysis negative. Blood, W.B.C., 8,500; R.B.C., 4,500,000; Hb., 85%. Diagnosis: Fibroid Uterus, with a probable right ovarian cyst. Patient appeared otherwise normal and as a good surgical risk.

Operation May 11, 1921. Usual preliminary preparations with morphine grs. ¼ and atrophine grs. 1/150. Ether was administered and well taken. Hysterectomy was done for multiple fibroid uterus, also a right ovarian cyst and appendix were removed. The operation was finished and the peritoneum closed in 35 minutes, and at this stage head of table was elevated from Trendelenburg position and immediately patient ceased to breathe, head of table was at once lowered and artificial respiration instituted. No pulsation could be felt, pupils dilated and insensitive. Atropine grs. 1/100 and camphor in oil grs. 3 were given. Drs. Ranson and Petteway could detect no heart sounds by auscultation. Several sharp percussion blows were made over cardiac area. After a lapse of three minutes the peritoneal sutures were removed and subdiaphragmatic massage done which caused a slight improvement in patient's color, but no heart beat or attempts at respiration. Extremities were bandaged and artificial respiration continued the whole time. Patient's expression changed to a waxy pallor and it was evident to all doctors and nurses present that patient's condition was hopeless. After a lapse of six

minutes I proceeded to do direct heart massage by making an epigastric incision and incising the diaphragm, introduced my hand in the chest and found the heart arrested in systole. I began gently squeezing the heart at about 25 or 30 per minute. In a few seconds a reddish hue was observed in patient's color and in about one-half minute a slight muscular twitch was felt and then the heart began beating very feebly and slowly, but in a few seconds a radial pulse could be felt, after cardiac action had been suspended for approximately seven minutes, five minutes later spontaneous respiration began, not more than three or four per minute, but gradually improved. Oxygen and saline given. Incision closed. Patient returned to room in apparently good condition. Respiratory rate 20, pulse 100 with good volume. In about one-half hour patient began to react to a semi-conscious condition, opened eyes and attempted to speak and moved about in bed. Several hours later pulse began to increase in rate and muscular twitchings developed in face and extremities; also pulse rate increased. Morphine and saline again given; also digifolin, but heart rate continued to increase and it was soon evident that the patient was gradually losing and died next morning, about fourteen hours from time of resuscitation.

No autopsy was done, but in all probability nothing could have been found to account for this primary failure. The ultimate failure, after resuscitation, was in all probability due to the irreparable damage to the cortical cells during the suspended circulation. This is a typical example of the cases, apparently good surgical risks, that suddenly pass out under general anæsthesia with no apparent reason.

This is my second case. The first was reported in the London Lancet (13), 1918. Briefly, Pvt. B. had infected wounds which resulted in metastatic infection. He was given an anæsthetic and just as an incision was about to be made respiration and pulse ceased. The ordinary methods of resuscitation were employed for ten minutes. Following this subdiaphragmatic massage was done for an additional ten minutes, with no response. The diaphragm was finally incised and direct massage done which only required ten or twelve gentle squeezes to start heart action, after it had been suspended for approximately 25 minutes. The patient lived 77 hours and at autopsy metastatic sepsis was found to account for the death.

The present available statistics of seventy-five cases subjected to heart massage, shows that sixteen, or 21 1/3% were successful, making a complete recovery; twenty-three, or 30 2/3% were partially successful in that the heart and respiration were revived, but the patients died in from one-half hour to two or three days. Death in several instances was probably due to a toxemia which was in no way connected with the resuscitation, as for example, my first case; nevertheless such cases have been put into group of partial successes.

Gunn (3) concludes from his experiments that the difficulty is not so much in starting the heart beating, but in starting it beating sufficiently soon that the cortical cells in the meantime have not been rendered incapable of recovery by stoppage of the circulation. To substantiate this, in the last reported ten cases cardiac action was established in all, but only two made complete recovery. It is also concluded by Gunn that the time limit for revival of the cortical cells can be calculated not as from the start of spontaneous heart beats, but as from the time of beginning massage, pointing out the value of

artificial circulation which is of fundamental importance and puts a more hopeful outlook on the whole question of resuscitation.

However, from these figures we can rightly conclude that the results in the main have been favorable in that more than one-fifth of the cases have been saved, and more than half of the total number have been resuscitated in a measure. The question now arises, how can we adjust heart massage in proper accord with its surgical bearings and save more of these cases? In studying the reports the successful cases have been, most naturally, those that were subjected to massage early in the syncope, and the possibility of resuscitation bears a somewhat definite relation to the time that elapses between the cessation and the massage. How long one is justified in waiting while carrying out the ordinary means of resuscitation, before resorting to massage, may be judged in a measure from the fact that there have been but two recoveries when the syncope has lasted more than ten minutes, and the largest measure of success has been when the interval did not exceed five minutes. Mellison's case (14) made a good recovery after an interval of thirteen minutes, but showed profound mental symptoms for several weeks. He and others have pointed out that the anæmia of the brain after a questionable interval produces irreparable damage to the delicate brain cells and other vital organs.

Fisher (15) and Gunn (3) advise boldness of procedure if heart has been stopped three or four minutes, stating there can be no further risk. Russell (16) judges from a review of experiments coupled with clinical experience and the reports of cases of recovery after massage that "we are probably safe in assuming that about five minutes loss of circulation is the outside limit that the human brain will stand and recover completely."

Norbury (17) has recently advocated massage after giving other methods a trial of only two minutes, and concludes that the fact that artificial respiration can be of no use in the absence of circulation is often overlooked.

My conclusions from clinical experience are in entire accord with those reached by Fisher, Gunn and Russell in research laboratories, that is, massage should be resorted to in any case in four or five minutes, and if the abdomen be already open, it should be done at once. A lapse of a longer interval should not bar this procedure. When the operation is decided upon the subdiaphragmatic method should be first done, it being the simplest, but in obstinate cases, especially in adults, where satisfactory compression of the heart below the diaphragm is impossible, as it was in my cases, this method should be dispensed with in two or three minutes in favor of the transdiaphragmatic method.

Another point of interest in this connection is the relatively small number of cases that have had the advantage of heart massage, as compared with the number that probably goes into the thousands of so-called "died on the table or anæsthetic death" that were never given a chance. Nearly every surgeon of broad experience has been confronted with this condition and I might add almost every intern or resident physician has seen these cases that "went bad under the anæsthetic" were given prolonged artificial respiration, pulmotors

employed in many cases, and stimulation of various kinds and other methods of resuscitation carried out for a variable length of time, yet they fail to re-establish the circulation and the case was eventually taken to the morgue.

CONCLUSIONS

1. Heart massage is an established method for re-establishing cardiac action which has suddenly failed under general anæsthesia based both on physiologic experiments and clinical work.

2. The possibility of resuscitation bears a somewhat definite relation to the time that elapses between the cessation of the heart and the massage, and the shorter the interval the more certain is the response.

3. If the abdomen be already open massage should be instituted at once. Otherwise not more than four or five minutes should be consumed in attempting resuscitation by ordinary methods. If for unavoidable reasons more time has elapsed the procedure should not be barred.

4. Subdiaphragmatic massage may suffice, especially in children and if promptly undertaken, but if only the apex is reached and the heart remains unresponsive after two or three minutes, it should be dispensed with in favor of the transdiaphragmatic method.

5. This new technique offers a simpler method of approach and is believed to be a decided improvement upon all other methods of doing direct heart massage, as it enables the operator to grasp the heart, involves less risk of hemorrhage, trauma, lung collapse and shock, and the incision can be more quickly and satisfactorily closed.

6. No surgeon, even if relatively unskilled, should be content to abandon a case without giving his patient the benefit of direct cardiac massage.

7. There is a great need for a more general use of heart massage, as it will serve as a final trump card for reviving many who would otherwise perish.

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DISCUSSION

Dr. E. S. Bullock, Wilmington: I would like to ask Dr. Bost to tell us why it is that the cerebral cells having functioned properly for hours should suddenly cease to function and cause the death of the patient some 16 hours after sudden stopping of her heart. It seems to me if the cerebral cells were able in connection with the heart itself to carry on they should be expected to improve in time. The possibility of local conditions such as injury to the pericardium and the escape of fluids or injury to the diaphragm or injury to the intestinal contents, but if there is some experimental evidence of this I think there should be some mention of this.

Dr. Bost, closing the discussion: I do not know whether I understand the doctor, but the experimental work would tend to show, that the cortical cells are injured in proportion to the length of the interval of suspended circulation. The muscular twitchings in this case, and in other such cases, are attributed to the irritability of the cortical cells and the ultimate failure due to irreparable damage to these cells together with incordination of the muscle fibers of the heart. Prevost, Balleti and others in animal experimentation concluded that fibrillary twitchings of the heart muscle were the greatest bar to successful massage.

I would say further in conclusion that a number of physiologists have been working on this subject. Perhaps Gunn, Prof. of Pharmacology at Oxford, has done more than any other one man, and has recently put great emphasis on this work. He and other prominent physiologists are agreed that massage is on a scientific basis and is a justifiable procedure. It is also a significant fact, that all the surgeons who have had clinical experience are agreed on its value.

In a rather extensive study of this subject in the British Medical Library in London and in the Surgeon General's Library, Washington, D. C., coupled with my clinical experience in the two cases here cited, I am convinced that we as surgeons owe this procedure as a last resort to the unfortunate patient that succumbs under general anesthesia.

I do not believe that we are aware of as many such deaths as actually occur. Recently in going over about 5000 records in which a general anesthetic was administered in a well organized surgical center, I found that seven deaths occurred on the table. This is unquestionably high but it shows how important this subject is, and that a great number of such deaths are occurring over the country that might be prevented, when records show that 20 per cent of such cases when subjected to cardiac massage were saved, and by resorting to massage earlier as we are now advocating we will be able to increase this percentage.

DIAGNOSIS AND MANAGEMENT OF FRACTURED SKULL

B. J. Lawrence, M. D., Raleigh

I am inviting your attention to this subject because of the constant occurrence and yet frightfully high mortality of head injuries. Probably no condition constantly coming under our attention has had less said about it, or less done to correct the situation than has this, certainly not until recently. All of the acute and chronic abdominal conditions; the thyroid; questions involving the genito-urinary tract of both male and female, have had due consideration and marked progress made: not so with injury to the brain. For years it was and remained the bugbear to the young surgeon, while accidents continued and the mortality remained astonishingly high. Not until quite recent observations, especially the efforts of SHARPE, was any real progress made.

In considering injuries of the head, we think, of course, and are speaking of CONCUSSION and COMPRESSION.

Concussion, serious as it is, especially from its diagnostic importance, carries with it little or no mortality and very few untoward after effects. Concussion, or a shaking up, usually without actual laceration of the brain tissue (though this may occur) follows external violence. The symptoms are important, it is true; they are transient and usually pass away in two or three days, unless actual and serious injury to the brain itself has occurred and then permanent damage is to be feared. Usually there is stupor, from which the patient may or may not be aroused; vomiting is common; the pulse varies, but is of low tension and likely to be rapid immediately after the injury; the pupils may be contracted or dilated but they are equal and do react to light; the eye grounds are not choked. In short, one has all the signs and symptoms of shock. The treatment is comparatively simple, and differential diagnosis being the all important point. It is chiefly palliative: rest, ice cap to the head and morphia for restlessness, but this should be given in very moderate doses and the patient watched carefully. For if it is given in large doses it may cloud the picture of an oncoming disaster and the chance for relief slip past. Probably the most important thing that can be said regarding a case in which concussion only is suspected is this, "watchful waiting," but keeping the patient under continuous observation sufficiently long to be reasonably certain that compression is not developing. I remember well a case, while I was a student, in which the compression was seven days in developing. An adult male slipped while carrying a piece of beef across the market floor and struck the back of his head. He was pale, a little dazed, nauseated, was said to have vomited and in a few minutes thought to be all right. But he had headache and this lasted, three, four or five days and grew steadily worse. On the seventh day he became stuporous and was admitted to the hospital, uncon-

scious, pulse full and slow, eye grounds rapidly becoming choked, a dark area just back of his ear (Battle's Sign) and that man had a compressed brain.

Coming then to compression; its causes are those from within, as new growth, abscess, hemorrhage, etc.; then those following external violence, blow on the head, fall, or foreign body. It is this group due to external violence that we are specially considering here.

Regarding the symptoms and signs: the signs vary all the way from that of a severe lacerated scalp with a crushed skull; hemorrhage from ears, nose and mouth and with these no man need err; to that other extreme in which there are no signs at all, and here I think that all men will err at times.

Shock is most always present to a greater or less degree and should be given very first consideration. "No case of brain injury," to quote from a distinguished writer, "should be operated on in the initial stage of shock. For if you do you superimpose the shock of the operation on that of the injury and by so doing one loses the chance of doing something worth while later and actually hastens the exitus." During this initial stage the pulse is rapid, its tension low, the temperature is apt to be subnormal and the skin cold and clammy. This lasts from six to twelve hours and then the picture will change. If the patient is growing worse, both pulmonary and medullary edema with accompanying signs will appear and the patient will rapidly succumb. On the other hand when the shock is over, if one is to be of service to his patient this is the time of ELECTION. If the patient is conscious he will tell you he has headache, may be nauseated and vomit; this is thought by some to have been overestimated and that it occurs with any shock. But in the words of a former teacher and surgical philosopher, "If that vomiting is of a particular character, forcible or spurting," cerebral, as he called it, then it is of the greatest importance. The pupils may be dilated or contracted as the case may be, depending on the cortical area that is disturbed; but they do not react to light or if at all, very sluggishly and they are apt to be unequal. The eye grounds are important just in proportion to the experience and skill of the ophthalmologist who examines them. The temperature is low at first. A very high temperature is serious and is a real danger signal. It is the result of a disturbance to the heat centers, especially when it appears early; later it may be and is most frequently due to infection.

The pulse rate and blood pressure are of tremendous importance, both in diagnosis and in prognosis. The rate is rapid at first and tension low. Later it begins to drop, 100, 90, 80, 70, 60; hour by hour the rate comes down and the tension rises. To quote a very dear friend and teacher, "A consistently and progressively decreasing pulse rate is of the greatest importance." While the pulse is still slow and full is the time for action if one wishes to be of real service, for to longer delay is simply inviting disaster. If one does wait, the rate goes up while the tension comes down. Nature has lost her grip, medullary edema has set in and death is almost inevitable. One may

see here the characteristic Cheyne-Stokes respiration appear, from which few if any come out; then paralysis, varying according to the location of the injury and the degree of pressure. We must not overlook convulsive seizures, especially if they are of the Jacksonian type.

In diagnosis X-ray is of great aid. Men of wide experience say it is misleading, and that may be true;—yet if properly interpreted (this of course can only be done by an expert) it is of inestimable value.

Then last but not necessarily least; as an aid to differential diagnosis, comes the use of lumbar puncture to determine if the fluid is under pressure—16-30 drops to minute to naked eye or 5-9 m.m. of mercury. This of course is increased in pressure resulting from fractures. Then, too, one may or may not find blood cells. This, I think, is of minor importance.

The diagnosis having been arrived at we turn to a consideration of the treatment. Regarding this I shall say but little, because of the more or less well recognized plan—that if the patient, as has been mentioned, is in extremis, one with better judgment will not operate; and if an operation is to be done it is a decompression, the only question being the location. Most operators go for the subtemporal region —and for good reason unless the signs and symptoms localize very definitely. I once heard a very noted surgeon say, "If there has been an injury, go there; if there are no signs of injury or of localization, first, be certain one is right and that it is necessary; then go in the subtemporal area: on right side first in a right hand man and vice versa in a left. And if the cause is not found, turn the patient over and go on the other side." Why does one do a decompression? For foreign bodies, for a growth, for abscess, for decompressed skull, for hemorrhage, for drainage: It is with these last groups we are here concerned. For elevation of a depressed bone there are two ways: First, away from the point of injury and with a flat instrument elevate the pieces; this has the advantage of leaving the fragments intact as far as is possible. Other equally good men prefer to go in at the right and elevate there. This has the advantage in that if there is a clot present, it can be removed. If there is a troublesome bleeder it can be more easily attended to. This, of course, refers to fracture of the vault—those of the base being far more difficult and the mortality frightfully higher. Here we can, at best in most cases, drain only and for this I prefer rubber tissue or omen tube, and trust the result to nature. For control of hemorrhage tie if possible, if not wax. (Look up Horslers Bone Wax?) (muscle?)—Very good.

In conclusion: I have tried not so much to tell you anything new or original but to emphasize what is already known to most of you, no doubt. 1st: Importance in differential diagnosis. 2: Choice in time of operation is after shock and before medullary edema.

DISCUSSION

Dr. J. D. Highsmith, Fayetteville: There is very little I can say on Dr. Lawrence's paper more than he has already told us. I think the paper a very good and timely one, and certainly on a very impor-

tant subject. These cases are certainly a bugbear to the young surgeon, and I think we should pay more attention to them than we do. In the treatment of these conditions I think that conservatism yields the best results, but we surely must not be too conservative.

In the compound fracture I think we should excise the bits of foreign tissue, cleanse the wound thoroughly and give a prophylactic dose of tetanus antitoxine. Following the operation, I think we should give urotropin in large doses to assist in preventing infection of the cerebro-spinal fluid. I think the post-operative care of these cases—following up these cases—is important. I believe we should advise a period of mental rest. It takes about twice as long a period of mental rest in an intellectual worker as it does the manual worker. This seems to me very important, because undoubtedly there is a certain degree of mental impairment in these cases of fractured skull which get well.

Dr. Jas. W. Gibbon, Charlotte: I enjoyed the paper very much, it amply covers the field. It is generally estimated that only one-third of all the fractures of the skull require an operation and the particular indication is to separate the operative from the non-operative cases – this usually requires every resource and instrument of precision a surgeon can obtain, it is largely a question of recognizing developing cerebral compression. There is one method of separating these two types mentioned by Dr. Lawrence that I think should be more greatly emphasized. This is the determination of the increased spinal fluid pressure; this can best be determined by the use of the spinal manometer. Most large observers of these cases particularly emphasize this method as a means of detecting developing medullary compression at its earliest stage. Increased spinal pressure in a case of developing cerebral compression is present before there are any pupillary changes to indicate the same condition. Increased pressure then is first shown in the basal cisterns of the brain and spinal canal. The three indications usually demanding decompression are: Depressed bone, as an immediate result of the injury; increasing cerebral compression, due to edema of the brain, and focal compression due to some localized hemorrhage or clot in the motor area.

Dr. Greene, Chairman: I was glad to see that point stressed by both gentlemen, about the use of the spinal manometer. It determines the pressure long before any physiological signs.

Dr. Lawrence, closing the discussion: I have nothing further to say, except to thank these gentlemen for the kind discussion. It has been a distinct addition to the paper and I appreciate it very much.

SOME SURGICAL PROBLEMS IN RECLAIMING CRIPPLES

O. L. Miller, M. D., Gastonia

Faulty mechanics are due to faulty weight-lines. The factor of accurate balance determines the efficiency of motor and weight carrying apparatus. These things are true in all physics and engineering, both inanimate and human.

Human mechanics while normally acting under the most delicately true physical laws can function, fortunately to some degree, under the most weird and abnormal appearing conditions. The beauty of the human motor apparatus may be marred but the inate, instinctive element of *preservation* of *function* keeps striving, to some degree, so long as there is life. This element of function in Surgery of Cripples is the thing we study to preserve, to improve, or to establish.

To get the maximum of weight bearing and motor function in the lower extremities of the body one must interpret into the skeleton of these extremities correction in weight lines before expecting proper muscle balance and function. After the skeletal lines are established muscle balance becomes a rather simple formula, a matter to be taken care of by development of weakened muscles, transplantation to obtain or alter muscle pull, or the use of braces.

In cripples, either emergency or chronic, one of the most frequent and disabling pathological entities is bone torsion. It may be insignificant or it may be marked—as in some of the cases I will show you. This torsion is brought about by faulty resting positions, or gravity acting at a time when unopposed by normal muscle tone. All have seen it suddenly occur in broken continuity of bone, as in fracture; and we plan to correct it in the treatment of such fractures. We are not so much, though, on the lookout for it in chronic conditions, as infantile paralysis, club foot, flat foot, etc., and therefore sometimes fail to figure it into our plan of treatment. When one fails to recognize pathological bone torsion and fails to correct it, fundamental weight-lines are off, and muscle balance, if corrected, will not hold.

This torsion is most noticeably true in the shaft of the femur and tibia following infantile paralysis. It begins early. At first it is only slight. Then in a number of months or years it becomes pathological. In acute infantile paralysis the muscles of the thigh or leg, or both, are completely paralyzed, the trochanter drops backward, the foot rolls out and added to the weight of a paralyzed limb are usually the bed covers, and no preventive apparatus. This can start the torsion. Later unequal muscle recovery allows the assumed position to become even more exaggerated. Attempted weight bearing on bad lines throws the plane of the rotated trochanter "off centre" from the plane of its fellow, and unbalances the pelvis. The gait is bad. The perpendicular planes through the center of the knee and ankle are not parallel. The centre of the ankle is everted. The heel is inside the posterior knee line. There is usually associated knock-knee.

The torsion of the tarsus is in the abnormal lines of the astragalus as transmitted to the fore foot.

To transplant tendons on top of pathological torsion of the skeleton means poor improvement in function, and relapse. Securing proper balance on corrected skeletal lines means improvement and permanency.

The treatment of cripples is a relative thing. Cures are never made. Improvement is the criteria. The motor apparatus of a normal human being would be 100%. The motor apparatus of an untreated cripple is between 0 and 100%. The result of treatment is measured in per cent of improvement in function. It is a gain to get from a bed to a chair, from a chair to upright with braces and crutches, from this to braces or crutches alone, or neither. It is a gain to walk where one has crawled. It is a gain to be on the sole of the feet when life has been spent walking on the sides of one's feet. These results are not 100% or cures. They are improvements.

When the attempt is made to correct femur torsion (The Femur Turning Operation of Hoke) the knee is rotated in, held, and the fascia lata is secured taut behind the trochanter. Then the femur is osteotomized in its lower fourth and the knee faced forward. Below the knee is disregarded at this time.

When tibia torsion is corrected (The Tibia Turning Operation of Hoke) a sub-periosteal osteotomy complete is done just below the knee and while holding the knee in line the tibia is rotated inward until the line of the heel is directly behind the knee. The fore foot is disregarded at this time.

When the deformities (torsions) of the tarsus (club foot, flat foot, flail foot, calcaneus, cavus, etc.) are attacked the basic change is brought about by first removing the cartilage from the under surface of the astragalus and the upper surface of the os calcis. In the next step the prolonged neck of the astragalus is sectioned, the head of the astragalus removed from the foot, its cartilage denuded, together with the opposing cartilage of the scaphoid, and then the raw head transplanted back into the tarsus. The new position of this astragalus head determines the correction. It is placed to the inner side to correct a club foot, to the outer to correct a flat foot, deep centrally to correct a cavus or flail foot. All this is followed by necessary refining manipulations, tendon transplantation, massage, exercises and training, descriptions of which themselves, would necessarily constitute other treatises.

DISCUSSION

Dr. Greene, Chairman: North Carolina has something else to be proud of in its work of reclaiming cripples. We congratulate Dr. Miller..

Dr. R. A. Allgood, Fayetteville: This is the first time I have seen Dr. Miller in twelve years. He and I were together our first two years

in medicine, and I am glad to see that he has continued for the last ten years as he did the first two.

Dr. Green, Chairman: I wish Dr. Miller in closing the discussion would tell us something about the conditions under which patients can be admitted to the hospital. I will have to ask that he make it brief, as our time is very limited.

Dr. Miller, closing the discussion: The little hospital has been under way nine months. It has served in some capacity about 400 children. Understand, they have not all been cured. The staff working with me are the people who deserve the credit. They get something done, medically, morally, physically or otherwise, and we feel the patients go home having their time well spent.

The children are admitted to the hospital by application. The hospital is written to for an application blank, and that is sent to the family. They fill in the name, age and social status of the child, then a local physician is asked to approve what they say, and to say something of the mental condition of the child. The application blank is turned back to the hospital and acknowledged by the institution. As soon as that child's turn arrives on the waiting list, he is sent for. Incidentally, there was a waiting list of enough children to fill two hospitals when the hospital was opened. We have beds for about 50, and now we have 50 and often more children. As soon as we get a vacant bed, we fill it. So where there is a seeming delay, please understand that the waiting list is long. Emergency cases are given preference. They are such as acute osteomyelitis and joint tuberculosis.

We would like to say further, we are going to do the best we can to make this institution useful to the children of North Carolina, and we will always be glad to have any of you call at any time. It is all open for investigation in any department.

PREVENTIVE AND PROPHYLACTIC PRACTICE OF ORTHAPÆDIC SURGERY

Alonzo Myers, M. D., Charlotte

The problems of the orthopædic surgeons are, and have been since 1914, largely those of operative and reconstruction work.

During the recent war the demands and necessities of more men to do orthpædic surgery as a specialty caused hundred of the younger men of the profession to take intensive orthopædic training in order that they might be equipped to deal with the results of war injuries and their sequelæ, as well as those questions of faulty statics which are evidenced in soldiers.

The surgery of war injuries has emphasized the necessity for prophylaxis in regard to future function of parts, and the positions for usefulness of various members have been pointed out over and over again.

As a Consultant Orthopædic Surgeon to the Fifth District of the Veteran's Bureau, I am convinced that a large number of cases presented for examination show faulty statics which play an important role in the causation of disability. Recently I have been conscious of the fact that a large per cent of the soldiers who present themselves complaining of pain in the back, particularly the lower back, are of the long backed type with varying degrees of mal-alignment, and in a surprising per cent, various anatomical deviations in the sacro-lumbar region are seen in the X-rays. We do not yet know the exact relation of these deviations to the symptom complex, but the frequency with which we get these findings seems to me to be more than a mere coincidence.

The enormous number of postural cases, both rejected from the service and still in the service, has been pointed out and talked of until it is common knowledge; and the rejected and discharged for foot defects alone, when the final figures are compiled, will certainly be great. When we stop to think what the causes of these disabilities are, and remember that findings of many investigators show that 70 to 85 per cent of our school children have postural defects, the reaction seems perfectly obvious.

Under the strain of military life, the potentially weak break down, and the same holds true in civil life, except that the stress and strain is applied more gradually and the disabilities are not apparent at so early an age.

Although orthopædic surgery is a specialized branch of surgery, it has a very broad outlook and many angles of activity.

The surgical corrective aspect deals with pathological and reconstructive problems. Preventive surgery deals not so much with the operative as with the non-operative type.

Perhaps the more spectacular surgical side is alluring to some, but certainly the influence of preventive surgery on the health and efficiency of the coming generation will give as great returns in helping to increase human happiness and usefulness.

The field for preventive effort is large and many angles might be discussed, but I desire to bring to your attention only one phase, namely, physical supervision in childhood.

As I have just stated, it has been shown many times by examiners of groups of unselected school children that from 70 per cent to 80 per cent are physically defective from a postural standpoint.

If this is so, and the need for corrective procedures is so self-evident, the question arises—who is to be responsible for the institution and carrying out of these corrective procedures?

It is safe to say that in general, at least about 50 per cent of the orthopædic surgeon's office practice, and a certain per cent in other branches of medicine and surgery, consists of adults, and in varying degrees, according to the interest and importance attached to faulty statics, the conditions for which these adults are treated are functional faults.

Joint conditions, due to improper weight-bearing, with or without other definite pathology, arthritis, periarthritis, periostitis, neuritis from such conditions as flat feet, pronated ankles, knock-knee, torsion deformities, short leg, faulty spinal alignment, in one or both planes, disturbances of alignment and weight-bearing in the pelvic and shoulder girdles make up a large part of our daily work.

How many cases of subscapular bursitis and other shoulder girdle neurites, from use in malposition, must we see in the adult before we realize that had proper attention been given in the growing years, this end-result would have been avoided?

How long are we going to teach that moderate degrees of bow-legs in children will be outgrown, when our offices and clinics are full of adults with valgus ankles and flattened feet because of moderate, uncorrected bow-leg?

The apparent correction of the deformity by close apposition of the legs is simply due to the fact that a compensatory angle has occurred below the ankle, caused by the weight being thrust inward by the curved tibial lever.

In later years the result of flat feet and other disturbances of leg alignment ensues. No amount of ordinary treatment can give these adults anything but symptomatic relief.

The same is true to a lesser extent of knock-knees, but more attention is directed to this in childhood and more corrections obtained.

Torsion deviations: Rarely have we seen much attention given to this condition, which is quite common and causes ultimately nearly as much joint and muscle strain and tissue changes as deviations in other planes.

How long are we to treat scoliosis caused by short legs before we attempt to institute some general action looking to the discovery early in life of the factors which underly the curvature?

We certainly have all seen and appreciated the wonderful improvement in health which is manifested in a body of soldiers after the routine drill and setting up work has straightened their spines and corrected to a large extent the general tendency to visceroptosis.

We know their physical efficiency as well as their health is improved. Why should we not give to all the coming generation the value of the lessons in physical efficiency which our experience in the army has given us?

Reconstruction work is a very necessary thing in war and the industries, but there should not be much need for it during childhood.

Constructive work is wanted here, the prevention of those conditions which most certainly are important factors in lowering the health and efficiency standard in the adult. Your own children probably fall in this class, which is 80 per cent of the total number of school children.

How is a program of constructive physical supervision and education to be brought about, and who is going to do it? We have a growing group of men and women engaged in physical educational

work, only a small percentage of whom know much of corrective methods. As a class they are enthusiastic, willing, and interested in this problem, but they lack guidance.

Only in our large centers do they come in contact with orthopædic procedures, and even there only the high schools and colleges have gymnasia, so that there is practically very little attention given to the postural defects in the grammar grades. This is expressly the age when the most careful work should be done.

The most effective and far-reaching work must be done during the grammar school age. As gymnasia in grammar schools are seldom seen, all the exercise the children have, which could have any corrective value whatever, is given by the grade teachers under a general supervisor who is responsible for all the grammar school work in the city.

It is not too much to demand that a trained physical director, schooled in preventive methods, and competent to recognize potential defects and deviations, should be assigned to each school. It should be her duty to act in an advisory capacity to both teachers and parents, to look over and observe all children who need special attention to their physical needs. She could refer these cases to the proper examiners and carry out their recommendations as to any general procedures decided upon.

Supervision of games is a particularly important phase of this work, and it is possible by intelligent choice to arrange certain activities to meet certain needs and to check vicious activities, such as some form of folk dancing, jumping rope, skating, etc., in children with flexible flat feet.

All physical activities can be altered to meet the gross needs of the group and will thus result in greater value to the individual.

A rough classification can be made by an examiner properly trained, sufficiently accurate to divide most of those with obvious defects like pronated ankles, flat feet, knock-knees, round shoulders, round or hollow backs, unlevel hips and shoulders, from those more nearly normal.

Briefly I would suggest a method as follows: At the beginning of the quarter or semester, the new pupils are lined up and the examiner, accompanied by a secretary, passes down the line and notes, first, all cases of unlevel shoulders—again, passing a hand down the curve of the waist and hips and then placing the thumbs on the anterior superior spine of the ilia, unlevel hips or tilted pelvis are noted.

The secretary notes the pupil's name, each time under each defect. Lining them up again, the examiner approaches from the end of the line, passing the hand over the back, notes prominence of scapulæ, round, flat or hollow back, and head position.

Position of the squad is again assumed and by slight pressure backward on the knee as well as by direct inspection, back knees are detected. Next, have the pupils stand with feet parallel, knees touching. Those whose malleoli touch and condyles do not, obviously have varying degrees of bow-legs and the converse detects knock-knees.

In the feet parallel position, if the patella points toward the median line of the body and not forward in the median line of the leg, there exists inward rotation of the leg and compensatorily pronated ankles or relaxed arches.

Bring the class to attention again without calling attention to their feet and note foot positions. In gymnasium slippers it is easy to observe faults in foot alignment and notation is made as to pronation and relaxed feet.

When this data is assembled it will be found that certain ones will be registered for two or three defects, or, in a word, are generally relaxed. This worst group should have immediate attention. Word should be sent to the parents for permission to make a detailed examination with clothing removed, and in cases that need expert attention they can be referred to the proper clinics or orthopædic surgeon for necessary care.

In this way there will not be a loss of a month or more before the examiners are aware of some of the worst cases, and, furthermore, they would not be able otherwise to estimate the size of the groups needing special attention to certain things.

On this basis they can adjust their corrective and general gymnastic procedures.

Fifty or sixty pupils can be thus roughly gone over in an hour and with a little experience and knowledge of types the gross errors can be detected.

In any group of school children fully 65 per cent will have two or more of the above mentioned deviations; consequently, the earlier they can be recognized, and the earlier any or all of the proper prophylactic procedures can be instituted, the better for the children thus afflicted.

The worst cases could be taken out in squads and have special exercises given, but as it will take some time to get to this stage, a good start can be made by modifying as much as consistently possible all the games and activities which will influence these conditions.

Supervision should also be extended to physical surroundings, seats, desks, chairs, etc., and their adjustments examined to see that they are correct for the various children under consideration.

In acting in an advisory capacity to the parents, much good would ensue. Inquiry should be made in regard to the child's habits and activities while out of school, home surroundings, bed postures, feeding, hours of play and sleep.

Clothing and its effect on posture should receive its share of consideration, and most mothers are very glad to be informed as to correct corsets and corset waists, brassieres, etc.

Whenever it is possible to have gymnasium facilities, the supervisor of corrective activities should change type, order, and progression of exercises to obtain the greatest individual benefits to the whole group taking work under her.

One example of this would be shown, for instance, by a method which is used in some gymnasiums and which has been subsequently

used in several schools, namely, to plan out a whole progression of exercises given in recumbent, procumbent or sitting positions. Enough stools and mats should be included in the gymnasium equipment to make this possible.

You probably know the value of toning up exercises in these positions and use them in your own practice as I do, but they can be used as well in group work as with individual cases.

Some of the advantages of the method are, briefly: The lying position rules out the effect of lateral asymmetries, such as short leg, unilateral flat-foot, or knock-knee with its pelvic tilt, and scoliosis.

The straightening out of all spinal curves in the early stages.

The fixation of the scapulæ and corrective effect on antero-posterior curves.

The margin of safety allowed in reference to heart and respiratory strain.

The improved position of the viscera.

The sitting posture is an especially good one in flattening the lumbar curve while the shoulder, scapular, and chest exercises are given.

Fatigue is not developed so rapidly because of the lessened balance strain.

In short, it allows corrective work to be given in corrective positions, a statement which should be axiomatic.

Instead of having the high majority with postural defects stand and exercise in positions of faulty alignment, is it not better to have the small majority who are normal assume the positions and do the work which will gain the maximum good results for the needy majority?

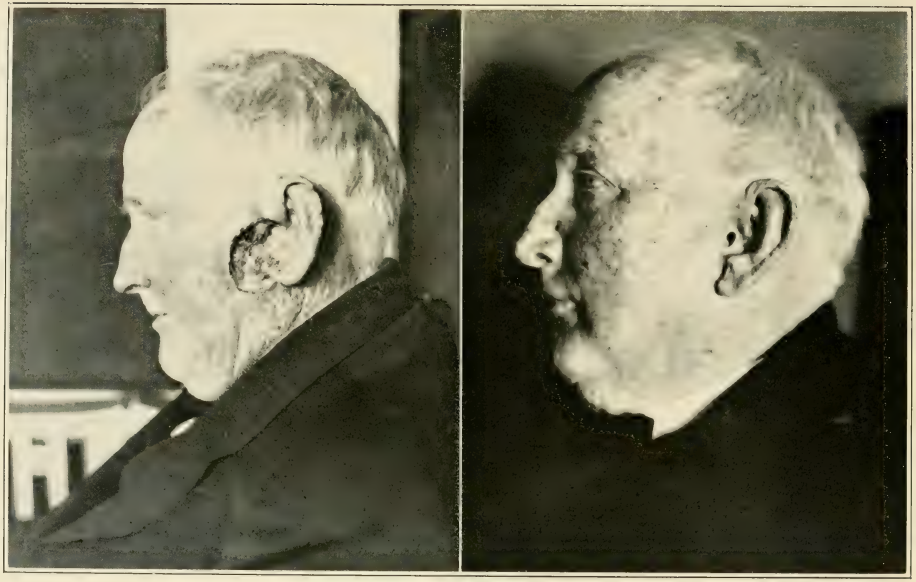
I recognize the fact that in two or three of the larger centers where there are many orthopædic surgeons, some of them have long been giving time and thought to the development of physical trainers and gymnasts, but through the country at large how many State normal schools, colleges, and universities giving major courses in physical training, have orthopædic surgeons on their faculties or even remotely connected with them?

It is perfectly obvious that there are not enough men interested in this line of work to see even a fraction of this 80 per cent of children who need the attention of trained individuals. Consequently, if this field is to be cultivated and a harvest gained, it will have to be done largely by men and women trained to do it.

All of us who are or have been connected with the reconstruction work appreciate that a great part of the credit for the results obtained belongs to our Reconstruction Aides, the greater number of whom are physical directors.

We are keenly conscious of the difference in value to this work of those who are experienced directors and those who had simply some special and intensive training.

This fact alone should make us realize that the well trained physical directors, who are graduated from schools giving courses in corrective



Treated by electrocoagulation.

Fig. I before treatment.

Fig. II after treatment.

orthopædic therapy, are to be the ones to transform our desires into facts, in dealing with this phase of the preventive and prophylactic problems of childhood.

The founder of orthopædic surgery included the postural and potential deviations in childhood within the purview of this branch, and it seems as though the responsibility for training these persons rests with the orthopædic surgeons.

If, then, we all will assume our share in the education and training of physical directors, we should use our influence to broaden the scope and raise the dignity of physical training as a scientific branch of education.

THE DIAGNOSIS AND TREATMENT OF EPITHELIOMA

Joseph A. Elliott, M. D., Charlotte

Strictly speaking, the term epithelioma is applicable to any epithelial tumor, whether benign or malignant. In dermatology, however, the term is confined to malignant epithelioma of the skin, and it is in that sense that it is used in this paper.

According to their clinical appearance epitheliomata are divided into four varieties, viz.: superficial, discoid, papillary and deep. There are several clinical sub-divisions described by various authors. Histologically there are two varieties: the basal cell epithelioma, and the squamous cell epithelioma. The former type is by far the most common and fortunately it is very much less malignant than the latter. Where the mucous membrane is involved the aquamous cell type is the rule, and here we expect early metastases. The basal cell type of lesion rarely metastasizes unless it approaches a mucous surface and then the character of the lesion changes and its growth is rapid.

Epitheliomata may arise from a number of so-called precancerous lesions, such as: senile keratoses, seborrhoic verrucæ, and cellular nævi, or from long standing keratotic lesions like arsenical keratoses, chronic psoriasis, lupus erythematosis, leukoplakia, etc. The malignant lesions of the skin, in a very large percentage of cases, appear on the exposed surfaces. In our opinion exposure to the elements plays an important part in their production. We frequently see senile keratoses that undergo malignant degeneration and for that reason we should not pass these old people by with such advice as: "that is of little significance, let it alone it will get well, do not have anything done to it until it becomes painful," or some other such non-scientific advice. These lesions *should* be properly attended to and thereby save much suffering as well as educate these people to the point of preventive rather than curative medicine. The paste quack receives most of his clientele through negligence on the part of the physician in giving these patients the proper advice.

There is rarely any difficulty in establishing a diagnosis of an epithelioma on a careful clinical examination. These lesions may

begin either as superficial or deep tubercles or nodules, superficial erosions, warty papules, or scaly patches such as the senile keratoses. The nodules are firm, waxy in appearance, and around the borders and over the surface of the lesions there is usually considerable telangectasia. When these lesions ulcerate the carcinomatous tissue is found at the border and here the diagnostic point of most importance is observed, viz.: the rolled pearly border. The base of the lesion is irregular, composed of smaller tubercles, and is usually of a bright red color in contrast to the pearly border. The redness is due to hypertrophy of the blood vessels in an effort to supply the rapidly growing pathological tissue. Due to this increase in blood supply the lesion bleeds freely when traumatized. While the border and base of the lesion are firm to the palpating finger they are, as a matter of fact, very friable and break down readily under the curette. Indeed one may easily determine the extent of an epithelioma by the ease with which it may be curetted out.

DIFFERENTIAL DIAGNOSIS

In establishing a differential diagnosis of an ulcerated epithelioma there are two conditions that must be taken into consideration: tertiary syphilis and lupus vulgarus. Frequently an epithelioma is mistaken for lupus. If we remember the following points this error will be avoided in a large percentage of cases. Lupus vulgarus begins in childhood while epithelioma usually appears late in life. Lupus consists of soft, brownish, apple-jelly nodules, while an epithelioma contains hard, pearly nodules. Epitheliomata are differentiated from tertiary syphilids by the borders in each case. An epithelioma has a rolled, pearly, nodular border while a tertiary syphilid has a smooth, sharply circumscribed, punched out border. The base of an epithelioma is much more irregular than that of a gumma. Frequently the question arises, has a senile keratosis undergone malignant degeneration? As a rule the clinical evidence of malignancy in such a case is the presence of ulceration. The patient's attention is first attracted to the ulceration by the fact that the lesion bleeds slightly when the scale is removed. The scale is soon replaced by a crust and the typical clinical picture of an epithelioma is present.

TREATMENT

The diagnosis of epithelioma is usually made by the physician of average experience, but the treatment of such a lesion is often a difficult problem. This problem may be solved in a number of ways: first, surgically by excision or curettage; second, by cauterization—either chemical, thermal or electrical; third, by radiotherapy. Any one of the above methods may prove successful in a given case. As a rule, we believe the method of choice should depend on the character and location of the lesion. We are also convinced that the best results will be obtained if we use combinations of these methods rather than any one alone. In our experience currettage, followed by a chemical

Lesion curetted, cauterized with acid nitrate of mercury and irradiated with X-ray.
Fig. III before treatment. Fig. IV after treatment.

Lesion curetted, cauterized with acid nitrate of mercury and irradiated with radium.
Fig. V before treatment. Fig. VI after treatment.

cauterant or electrodesiccation, supplemented by X-ray or radium therapy, offers not only the best chance of a clinical cure, but gives you by far the best cosmetic result. We believe that curettage is indicated in all small lesions for by this means practically all of the mass of epitheliomatous tissue can be removed. Since this tissue is very friable one can easily determine the extent of the growth with the curette. It is really surprising sometimes how far the cancerous cells have involved the apparently normal tissue. This fact undoubtedly accounts for many of the recurrences following surgical excision. After the major portion of the cancerous tissue has been removed a chemical cauterant such as the acid nitrate of mercury is applied to the base of the lesion or it is desiccated by means of the ouidin current from a continuous high frequency machine. As soon as the reaction subsides, which usually takes from three to seven days, the lesion should be thoroughly irradiated with either X-ray or radium. One should be careful to include a margin of the apparently normal skin in the field of exposure. The dosage should be of sufficient strength to produce an erythema so that in case any cancerous cells are left they will get a lethal rather than a stimulating dose of the ray.

CHOICE OF TREATMENT

The choice of the method of treating an epithelioma is important both from a clinical and a cosmetic standpoint. When the lesion is very large and necessarily a large amount of tissue must be destroyed in order to obtain a cure, electrocoagulation or diathermy is the method of choice. There are two electrodes used in this procedure. The indifferent electrode consists of a metal plate eight inches square and one-sixteenth of an inch thick. This is placed on the abdomen or back, with a towel or some gauze soaked in normal salt solution interposed between it and the skin. The active electrode consists of a small metal piece which may be a narrow blade or a single point. The choice of electrodes depends on the character and location of the growth. The active electrode is inserted into the tissue to be destroyed and the current is switched on. Bubbles of gas are seen to escape around the electrode and the tissue whitens from coagulation. The current is then switched off and the electrode is applied to an adjoining part. This is continued until the mass and a part of the surrounding tissue are coagulated. Where skin lesions are to be destroyed a local anæsthetic may suffice, however, a general anæsthetic is sometimes necessary. One should use extreme care in coagulating tissue near blood vessels. The wall of the vessel will coagulate before the blood stream, due to the fact that the blood is moving. Later the vessel wall may slough causing a severe hemorrhage. If the malignant tissue has extended to or beyond an artery, the safest plan is to ligate the vessel before the diathermy is performed. The coagulation that is produced by diathermy is produced in the tissues as the current traverses them and not from heat in the electrode. The heat travels the path of least resistance and thereby has a tendency to penetrate malignant tissue before it will normal tissue. Where the glavano-thermo-cautery or

Paquelin cautery are used the tissue is charred and inasmuch as such tissue does not conduct heat readily the coagulation extends for a very short distance beyond the charred cavity. With diathermy, however, it is the electricity that produces the heat and since the tissue is a good conductor of electricity there is not the limitation to the coagulation that occurs with the former. When only a small amount of tissue is to be destroyed, the monopolar electrode from the high frequency machine is used to advantage. This is particularly serviceable in treating lesions on the eye lid or conjunctiva for with it the amount of destruction is easily controlled. In our experience we have obtained results in such lesions, with this method where other methods have failed.

When an epithelioma is located on the face and not in apposition to a mucous membrane, we curette the lesion thoroughly, apply acid nitrate of mercury to the base, and saturate it with X-rays. This gives the best cosmetic result and in our experience it offers a permanent cure in practically every case. Radium may be used instead of X-ray but we get no better results and it takes more of the physician's as well as the patient's time. Radium does, however, have a better effect than X-ray when the mucous membrane is involved and it is our custom to use radium in these cases.

While we do not operate every case of epithelioma that comes to us we are able to take care of a large percentage of the cases. Of 150 cases operated in the past three years we have had only two recurrence. One of these submitted to a second curettage followed by desiccation and the X-ray and the lesion healed promptly. The second case would not submit to further treatment.

DISCUSSION

Dr. E. S. Bulluck, Wilmington: I would like to know if the doctor gives an anæsthetic when he cauterizes.

Dr. Elliott: It is necessary to use at least a local anæsthetic in these cases. In a large majority of the cases we use novocaine. All cases except the last one shown on the slide were done under local anæsthesia.

Lesion curetted, desiccated and irradiated with X-ray.

Fig. VII before treatment.

Fig. VIII after treatment.

Lesion treated with X-ray alone.

Fig. IX before treatment.

Fig. X after treatment.

EYE, EAR, NOSE AND THROAT

J. M. Parrott, M. D., Kinston, Chairman

Report of committee appointed to confer with the State Board of Health in regard to the manner of conducting free tonsil and adenoid clinics in North Carolina.

To the Eye, Ear, Nose and Throat Section:

We, your committee appointed last year to meet with the State Board of Health and to consider and work out a feasible plan of conducting these clinics, have held several conferences, and as a result of our deliberations wish to make the following recommendations:

1. We recommend that the present law be so amended that the State tonsil and adenoid clinics be held only in counties in which the county board of health approve the clinics.

2. We recommend that the manner of conducting clinics in said counties be approved by the county board of health.

3. (a) We deem the surgeon-personnel of these operating teams a very important feature of these free clinics. We, therefore, recommend that the surgeon selected shall limit his practice to this specialty.

(b) That the surgeon in charge shall either have had one year as intern in an eye, ear, nose and throat hospital, or shall have had three years' experience in eye, ear, nose and throat work.

4. Finally, we recommend a continuance of a similar committee to confer with the State Board of Health relative to these matters.

5. Time of taking effect, January 1, 1923.

H. H. Briggs, Chairman.
C. W. Banner.
J. P. Matheson.

THE MANAGEMENT OF CONVERGENT STRABISMUS

V. M. Hicks, M. D., Raleigh

Time will not permit a discussion of all types of strabismus, therefore the writer has decided to concentrate on comitant or con-comitant strabismus, as this is the usual type we see in practice.

Very few of us consider the serious handicap that strabismus places on a child. It plays a great part in moulding the disposition. The patients soon become quite sensitive due to the unjust mocking on the part of their playmates. There is no question about its having an effect on the mental development in a large percentage of cases. In

this age when rivalry is so keen the deformity causes a handicap that can scarcely be overcome. Therefore if the child is to be given a fair chance this deformity should be corrected early. We must impress upon the parents that they are the responsible parties and the child can justly hold this against them in later years. Why should they allow their fears of having the child hurt prevent them from giving it an equal chance with its playmates? They must remember that although they can overlook the deformity others do not and will not.

Comitant strabismus is largely due to the following: high or unequal refractive errors, excessive accommodation causing excessive convergence, congenital muscle weakness or poor innervation, insertional anomalies and faulty fusion. A review of the literature on this subject shows that a great difference of opinion exists. Duane stresses the importance of excessive convergence incident to the overactivity of accommodation in overcoming refractive errors. This no doubt plays a great part. Davis and Wilkinson believe that faulty fusion is the chief factor, pointing out that comitant squint is a binocular rather than a monocular affection. Green stresses muscular anomalies and offers good argument in favor of this view. The many differences would lead us to believe that all are correct in certain cases, and none in all and that each case should be studied with the idea of arriving at the pathology existing in each case.

The point upon which we are all agreed is that it is of primary importance to see the cases very early, just as soon as it is observed that a squint has developed. The public must be impressed with the importance of early examination and treatment. Most laymen and a surprisingly large number of physicians believe that squints are often overcome and that they should wait until puberty before consulting the oculist. It is commonly taught that strabismus results from such petty things as a bee sting of the lid, nervousness, scares, foreign bodies striking the eye and many ridiculous reasons. These and other fallacies should be disproved and parents should be taught that if anything is to be accomplished in non-operative treatment it must be begun very early. Cures from non-operative treatment rarely occur after the age of eight.

It is important for oculists to have some definite method of procedure. I recommend that the following routine be adopted by those of us who do not have a systematic way of examining and treating these cases.

1. The history is of no little importance. If the strabismus has existed since birth we may be sure it is due to a paralysis or paresis of the external rectus. In these cases, however, it is not uncommon to see evidences of some intra-cranial involvement, which has caused the paresis. We should also note if the deviation followed one of the acute exanthemata or any debilitating disease. If this be true then we would believe that it is due to a paresis or that it has occurred in an eye that would have carried the error of refraction perfectly well, but for the temporary weakness of accommodation caused by the toxemea. Certainly fusion plays no part in this type of case, which should yield to non-operative treatment. We wish to know if the squint is uni-

lateral or alternating, constant or intermittent. If intermittent it is likely due to a spasm of the inferior oblique. We should know if there are any cases of strabismus in the family. Strabismus is of course not inherited, but some of its causes are especially high and unequal refractive errors.

2. The vision should next be taken as accurately as possible. Many methods have been devised for taking the vision of children. The picture card is probably best adapted to most cases. If no amblyopia exists we know we are dealing with an alternating strabismus or one that has developed very recently. If the vision is less than 20/200 or 1/10 very little hope can be given for relieving the poor sight. If it is secondary to the strabismus it can be largely overcome as in the cases reported by Johnson in which the good eyes of adults were destroyed by accident and the amblyopic eyes rapidly developed normal vision. However, we should impress upon our patients that as long as the eye is turned it is not being used. The only hope of improving the sight in a squinting eye is to exercise the visual function. Straightening the eye tends to do this. If nothing is done the vision will gradually grow worse, just as an arm will wither if constantly kept in a splint. It is the old principle of atrophy from disuse.

3. The muscles should next be examined. The eyes are carried into the six cardinal positions and with the screen test determine if there is any lagging of a muscle or if any muscle is overactive. Weeks advises the use of the tropometer to determine the lateral movements and thinks this is an excellent way to decide the operative procedure. The perimeter can be used with fair accuracy. Prisms may be used. With a little practice one can measure the deviation fairly accurately by having the patient look straight ahead with the good eye screened and after removing the screen note the amount the eye rotates. In this connection Duane points out that spasm of the inferior oblique often produces convergent strabismus. This spasm is generally produced by a paresis of the superior rectus of the other eye. Carefully watch the squinting eye turn in. If it has a tendency to turn up and in, the inferior oblique must be in spasm. In operating with this condition present one must be guided by the amount of spasm. If it is marked a tenotomy of the inferior oblique should precede the regular operative procedure. If the spasm is slight then tenotomy of the internal rectus, which should be confined to the upper fibers of that muscle.

4. Next in order should be an examination of the media and fundus. Opacification in the cornea, lens or at any point along the visual axis may produce strabismus. Congenital fundus defects play a similar role. The refraction of the unaffected eye generally determines whether the eye turns in or out. The examination of the media and fundus should be repeated when the pupils have been dilated.

5. Cycloplegic refraction should always be done, a manifest refraction is generally lost time. Atropine should be used for three or four days and the patient returned for the second examination. At this examination two very important things are determined.

(a) The full refractive error.

(b) Whether or not the strabismus has decreased, with the accommodation paralyzed. Retinoscopy gives us the error fairly accurately and should always be used.

This completes our investigations of the case and we should now be prepared to advise treatment and discuss the prognosis. If the vision is fair, the patient young, and the deviation decreased by the cycloplegic the prognosis should be favorable with non-operative treatment. If the strabismus has not decreased, very little hope can be entertained for non-operative treatment.

In the vast majority of cases regardless of how useless non-operative treatment may seem we should try it. This correction with glasses of course is for both eyes, as it takes the accommodative strain from the unaffected eye and tends to decrease the amblyopia in the convergent eye. In prescribing these glasses some oculists only partially correct the error, but it is generally believed that full correction to within one-fourth diopter yields the best results. Weber advises the further use of wafers (two to three diopters) for the near work to completely put at rest the accommodation and thus minimize the stimulation to converge. In addition to glasses we should instruct our patients in the use of shades for the unaffected eye. Atropine should be used in the good eye, but not over a longer period than two weeks at one time. The shade should be alternated with the atropine. We should advise against the use of atropine for both eyes except for diagnostic purposes, as this would tend to produce amblyopia in both eyes. Aside from the use of glasses, atropine and shades, many methods have been devised to treat the amblyopia and promote fusion. Such instruments as amblyoscopes, stereoscopes and the like. I have little faith in these instruments. I have never gotten results from them and I find that many of our best authorities have abandoned their use.

When shall we operate? Green's investigations into the methods employed by a large number of oculists show a wide difference of opinion. I believe there should be no age limit. Generally speaking, operations can be postponed until the age of four, the exception being in a definite uncomplicated congenital paresis. Soon after the age of four, depending on the individual, the operation can be done under local anesthesia. General anasthesia should be avoided as much as possible, because we cannot judge our results with the patient asleep. Full thirty minutes should be given to cocainizing the eye, dropping in one drop of a four percent solution every five minutes. Just before the operation is begun a few minims of a one-fourth percent of cocaine with a drop of adrenalin are injected under the conjunctiva, over the muscle to be operated. This should be repeated when the tenotomy is done. With this anesthesia very little pain is produced. We must remember that pulling on the muscle produces considerable discomfort and this can be avoided to a large extent. As to the type of operation many are used. The advancement was one of the first. Muller declares it to be imperfect and that it has no analogue in surgery. The advanced muscle adheres to the original insertion. The sclera is injured by the needles, and I have seen one case of atrophy of the globe following this operation. In the final result a lump of tissues remains

under the conjunctiva and the unsightly "bridle" too often occurs from shortening of the conjunctiva. These latter objections apply also to the more recently devised tucking operations. A perfect cosmetic effect is desired in all cases and I therefore employ a modified resection of the externam rectus with an open partial tenotomy of the internal rectus. The external rectus is resected after the method of Reese except the fascia over the muscle is left. This will prevent the suture from splitting through the muscle. Some surgeons worry over the amount of muscle to be resected. I have never seen a permanent over-correction from a resection alone, but I have seen a few correction of the external rectus with an open partial tenotomy of the inmost important part of the surgical procedure. The pathology existing is a weak muscle on one side and a strong overacting muscle on the other. Our problem is to strengthen the weak muscle as much as possible and to weaken the over-acting muscle as little as is necessary to straighten the eye. The older surgeons elected a free complete tenotomy generally cutting the structures from the superior to the inferior rectus. This was simple and produced a quick result. But a large percentage of these cases developed a secondary divergent strabismus. In addition there was a sinking of the caruncle producing a staring glassy eye. In my opinion it is poor surgery to ever do a complete tenotomy of the internal rectus except in certain adult cases due to the part this muscle plays in convergence. A complete tenotomy of the external rectus may readily be done without fear of unfavorable results. In tenotomizing the internal rectus the caruncle should well be dissected up and a few fibers left intact. As has already been stated if the inferior oblique is spasmodic all the upper fibers should be cut. The plan generally followed is to leave a few fibers above and below cutting the central ones. If an open tenotomy is done the remaining fibers can almost be counted. The amount of tenotomy should be determined by the result the surgeon is getting. Have the patient sit up and fix an object. If the eye is straight no further tenotomy should be done. For alternating strabismus both external recti should be resected and a tenotomy done on the eye that tends to converge after resections. This is usually sufficient but a tenotomy of the remaining internus may be done if necessary. Diplopia sometimes develops after the operation. This is of little moment and the patient overcomes the double vision by fusion or exclusion of the false image in a short while. If after the operation there is a tendency to overcorrection glasses should not be given for a while. If there is a tendency to under-correction, atropine and full correction should be prescribed to put at rest the accommodation and convergence.

Laymen get some very erroneous ideas about the operative procedure, so we should explain it in detail. I have seen people who express the idea that the eye is taken out and turned around. Others believe the eye is "split open." It should be explained that it is not the eyeball but the muscles attached to it that the operation is confined to. We should further explain that this operation upon adults should give a perfect cosmetic result but does little to improve the sight.

CONCLUSIONS

1. Lay-people should be taught that strabismus can be cured, that children do not overcome strabismus, that if anything is to be done in the way of non-operative treatment it must be done early, that operations for the correction of the defect are nothing horrible.

2. A definite method of examination enables us to know what to do and when to change our tactics.

3. There is no age limit for operative treatment. The time to operate is when non-operative treatment has failed.

4. Resection of the external rectus with an open partial tenotomy of the internal rectus is the safest operation and yields the best cosmetic results.

DISCUSSION

Dr. J. G. Murphy, Wilmington: I enjoyed very much this complete paper by Dr. Hicks on a subject that comes close to any man who is engaged in this line of work. I must say that he has covered the subject very completely, and in a way which I consider is exceedingly practical. I have learned from some years of experience some of the things he has mentioned in his paper to be guarded against. The sooner any of us who are doing eye surgery learn that we can do a complete tenotomy of the external rectus, but not the reverse, the better for us. The success of the operation as recommended by him, for the correction of strabismus, in the resection of the externus and a partial tenotomy of the internus, gives us hope. We cannot do a complete tenotomy of the internus without getting sometimes disastrous results. Within the last fifteen years the teaching has been changed a little. We used to do complete tenotomies, and I have seen over-correction following not only my own surgery, but that of other men in the same institution in which Dr. Hicks got his training. It is better to have a strabismus than an over-correction and amblyopia.

Dr. Hicks referred to the failure of results in squint operations because of deformities in the obliques. That one advance in eye surgery is bringing splendid results at the present time, the work of correcting deformities of the obliques where the failure of the operation has depended upon the over-exertion of the oblique muscles.

He also referred to the restored functions in eyes. That is something, in my opinion, which should be seriously considered by all of us. We know that functions are restored, and it has been very encouraging to me to see the improvement of vision when the vision was considerably reduced. I do not think that we should ever give up. They ought to be corrected, as a matter of fact, for cosmetic reasons, but where people do not consider that much, we ought to correct them because the eye may be needed in the future, and the function is improved after the straightening.

The laity are getting a little better educated along the line of demanding that strabismus and squint be corrected, but we are just at

the beginning of an educational campaign in that line. As Dr. Hicks said, we should advise correction before the damage is done.

Dr. O. C. Daniels, Goldsboro: I enjoyed the doctor's paper very much, and desire to discuss it only as I differ with him. I am following the procedure of operating on cross eye as taught me by Dr. Davis in New York. Dr. Davis believed first, last and always in tenotomies. He said if we would be careful in doing tenotomies we would not get bad results. I saw him exhibit case after case in the New York Hospital in which he had done tenotomies, and never saw a bad result. I saw other cases in which partial tenotomies had been done, or advancements, etc., and they did not get perfect results.

I also differ upon the point of anesthetic. Giving children general anesthetics and children above 15 years of age and adults a local anesthetic. If there is a convergent squint, alternating in both eyes, and the vision is good, I use atropine and make calculations as to what glasses the patient should wear. Then I do the operation under a general anesthetic, if a child. Never try to operate under a local anesthetic upon a child under 15 years of age. When you get the strabismus hook under the muscle stretch it until the iris is practically hid under the opposite canthus of the eye and repeat this once, which makes two stretchings for one muscle. The stretching of the muscle under a local anesthetic of course will give you pain. In muscles that have been stretched can be completely tenotomized without fear of having them retracting and giving an over-correction. If you want a slight result, say 2 or 3 millimeters, you will not cut into Tenons capsule only any more than is sufficient to completely tenotomize the muscle. If you want a greater result, say 10 millimeters, cut into Tenon's capsule on each side of the muscle, which will allow the muscle to recede from its original attachment. Personally, I cut only one muscle at a time, and, if necessary, cut the other muscle later. I am very careful in advising results in cases that have amblyopic eyes, but advise operation with a view to improving the patient's looks. In amblyopic eyes you have to be very careful, because the amblyopic eye is just as likely to go one way as the other.

Dr. Hicks, closing the discussion: I realize perfectly well that tenotomies are still being adhered to by a certain number of surgeons, but I think the authorities have abandoned their use alone. Duane, who I think will be recognized as the best muscle man in the country, agrees with what I have said in my paper. The problem we have is a weak muscle on one side and a strong, over-acting muscle on the other, so we should strengthen the weak part as much as possible and weaken the over-acting part as little as necessary. In stretching a muscle you are not able to judge the permanent injury to the muscle. There may be a definite tear in the muscle, which may be permanent, or there may be a temporary paresis, due to the traumatism. What you want is the activity of that muscle as it is going to be years after, and you want to see the activity right then. So my idea is to weaken the muscle, leave it just as active as it will be in the future, and then

see what the result will be. I have seen a large number of these complete tenotomies in New York, done by the men who adhere to tenotomies, and I have also seen a large number of cases of secondary divergent strabismus from it. Of course, that is not impossible to be overcome, but requires a second operation which should always be a resection of the cut muscle. If advancement is attempted, you are certain to get a good deal of trouble from bleeding, etc., and you are not certain that the advancement will adhere.

SOME OBSERVATIONS OF LARYNGEAL TUBERCULOSIS

Joseph B. Greene, M. D., Asheville

The fact that the laryngeal lesion is by far the most important complication of pulmonary tuberculosis is my reason for addressing you today on the subject entitled "Some Observations of Laryngeal Tuberculosis."

It is not my intention to offer anything new and startling on this rather old subject, but simply to present to you some results of my experience in the care of this serious and distressing condition. I shall also attempt to reconcile, or rather explain, the very divergent methods of treatment now practiced by men of equally high standing in our profession.

I refer to those who rely upon rest of the voice alone, those who believe in radical surgical measures, and those who occupy a medium ground, so to speak, using local applications, and perhaps the cautery in certain selected cases.

As to the frequency of the occurrence of laryngeal tuberculosis as a complication of the pulmonary condition, Lockard considers fourteen observers, including Lake, Schaeffer, and Krieg, and found the percentage to be 34.5%. This examination, of course, included the mildest cases where the diagnosis of pulmonary tuberculosis had been made.

As to whether or not tuberculosis of the larynx is *ever* primary has long been a mooted question, which has never been satisfactorily answered. In my opinion, the larynx may be attacked primarily, but so rarely that its occurrence has no practical significance.

Fetterolf examined the larynges of 100 patients who had died of tuberculosis at the Henry Phipps Institute in Philadelphia, and found that 83 showed gross tuberculosis lesions, 13 were apparently free from invasion, and four were doubtful. The writer expressed the opinion that others might have shown tubercle formation had sections been made and examined under the microscope.

As the tuberculosis specialist has for years been pleading for an early diagnosis of the pulmonary lesion before the usual symptoms of cough, temperature, etc., appear, and when the disease is most amenable to treatment, so we, as laryngologists, make a plea for the

early diagnosis of the laryngeal complications before the appearance of the usual symptoms, hoarseness and pain. It can hardly be questioned that the most gratifying results in our treatment of laryngeal tuberculosis are obtained in the early stages of the disease.

The success of the plea for an early diagnosis of the pulmonary lesion is evidenced in the frequency of cases now appearing at our health centres for conditions other than those of tuberculosis. In order to make an early diagnosis of laryngeal tuberculosis, it is necessary to make regular, systematic examinations of the larynx. This should be done as routine, whether there be symptoms referable to the larynx or not. It may be a fairly late lesion when the symptoms of hoarseness and dysphagia appear.

Without entering fully into the question of diagnosis of tuberculosis of the larynx, I will say that the appearance of acute laryngeal symptoms, such as hoarseness, increase of cough and expectoration, with the appearance of redness of the larynx, should make us think of a laryngeal complication, particularly so, if the duration is more than a fortnight. The appearance, too, is very suggestive if the redness be localized on one side of the larynx, or the posterior commissure. Swelling of the arytenoids, or the epiglottis in the tuberculous is almost a positive diagnostic symptom of a laryngeal complication. It is an accepted fact that the prognosis of laryngeal tuberculosis is greatly dependent upon the pulmonary condition, though this is not always the case, for there are instances where the laryngeal lesion is out of all proportion to the chest findings. It is in the latter type of cases that we are most encouraged in our efforts to improve the local condition in the larynx. Freudenthal says: "The curability of tuberculosis of the lungs depends very much on the cure of the laryngeal condition." Levy says, in this connection: "While this may be a strong statement, it nevertheless possesses a large element of truth."

In making a prognosis of laryngeal tuberculosis, there are certain local appearances of the lesion, as well as the general condition of the patient, which influence us in determining what is likely to be the course of the disease. In the first place, the site of the lesion is a very decided factor as to whether or not we may expect an arrest of the local condition. Intrinsic lesions, that is, those within the larynx proper, as the cords, the ventricular bands, or the posterior commissure, are much more likely to run a favorable course than those situated upon the epiglottis, the arytenoids, or the aryteno-epiglottic folds. The explanation of the fact that the latter type of cases are prone to run an unfavorable course may be that they are likely to occur late in the course of the disease, and also from the fact that they are the painful areas of the larynx which interfere so much with the nutrition of the patient. However, there are exceptions to this rule; for example, when an ulcer appears early on the tip of the epiglottis which can be surgically removed, the prognosis is fairly good. In making a prognosis from our laryngeal findings, we should also bear in mind whether we are dealing with an infiltration or an ulcerative stage, the latter condition, of course, offering the patient a less favorable outlook. We should determine again whether the case be acute,

as evidenced by marked inflammatory reaction, and sometimes œdema, or an inactive lesion with a good deal of tendency to fibrosis. The larynx heals, as we know lesions of the lungs do, by resolution and fibrosis.

I would like to emphasize the importance of the laryngeal findings in determining the prognosis, and the treatment likewise depends much on the type of the disease with which we have to deal. This differentiation of the type and stage of the disease has not, in my opinion, been sufficiently considered, certainly not by myself, which might explain the divergent views held as to the treatment of laryngeal tuberculosis referred to in the early part of the paper. It is obvious that large œdematous arytenoids, or acute inflammation of the epiglottis, would require entirely different treatment from that type of disease showing a mild infiltration of the cords, or thickening of the posterior commissure.

The first mentioned type has already all the local reaction with which it can contend, and does not require stimulating applications, as solutions of formalin, lactic acid, or silver nitrate, while the mild, more or less chronic type frequently requires local applications in order to cause a reaction, just as indolent leg ulcers at times require stimulating treatment. If I mistake not, tuberculin is administered in certain types of pulmonary tuberculosis for the purpose of causing a local reaction, bringing fresh blood to the part. We should always bear in mind that whatever local treatment is applied, its use has in mind not its disinfecting qualities, but rather the local tissue reaction.

Before speaking further, I will say that a well equipped sanatorium with a treatment room for throat conditions is almost a requisite for the proper care of laryngeal tuberculosis. The physical condition of the patient is often such that frequent visits to the office for treatment would prove positively harmful. There is no question but that rest to the voice, in certain types of the disease, forms a *very* important element in the treatment of this condition. In fact, it may be the only therapeutic agent required. This would be the case, probably, in early infiltration of the cords and posterior commissure, particularly when there is considerable inflammatory reaction. In the late lesions, with a tendency to fibrosis, and likewise in cases where the epiglottis alone is involved, I am not at all sure that silence has any influence whatsoever on the course of the disease. The comparison often made of the advisability of prescribing rest alone to the larynx, as is done in cases with tuberculosis of the lungs or a joint tuberculosis, is hardly a fair one, for the reason that neither the alveoli of the lungs, nor the tissues of a joint are accessible for local treatment as is the case with the larynx. As it is often a difficult problem to decide just when the change from rest to activity should be permited for the pulmonary patient, so it is with the laryngeal case. It is far safer to return gradually to the use of the voice, watching the effect, if any, produced on the laryngeal lesion. Care should be taken always to avoid fatigue of the larynx.

As prophylaxis is now so much the order of the day in almost every branch of medicine, so it would seem as if we should take every

measure which would tend to prevent this distressing laryngeal complication. A patient with pulmonary tuberculosis, especially if he has positive sputum, should not strain his voice by loud talking or singing. Needless coughing should, so far as possible, be controlled. In order to protect the larynx from trauma of inspired air, it is very important that nasal respiration be established. The harmful effect on the larynx of breathing through the mouth cold and dusty air is so evident as to need no argument from me. If medical treatment of the nasal mucous membrane will not suffice to insure nasal respiration, it may be necessary to resect a deviated nasal septum, or remove an obstructing middle turbinal body. Infected nasal sinuses should be treated, and, if the patient's condition will permit, diseased tonsils, which are positively harmful, should be removed, under local anæsthesia, of course. Infected sinuses and diseased tonsils are harmful on account of the tendency for the spread of their infection downward to the larynx, in this way producing a simple laryngitis, a place of least resistance for the tubercle bacillus. A simple laryngitis in the tuberculous should receive appropriate treatment, emphasizing the necessity of rest to the larynx.

I have found formalin applications, beginning with 2% solutions, applied on alternate days with an applicator, useful in certain indolent ulcerations and in sub-acute and chronic infiltrations. In advanced lesions of the larynx, with extensive ulcerations, it seems best not to resort to local treatment, other than the most soothing sprays to add to the patient's comfort. These patients complain greatly of a dryness of the larynx, which can be helped by a spray of hydrocarbon oil.

In case of ulcer of the epiglottis situated near the tip and which is causing pain, the cartilege may be removed surgically. There are cases, however, particularly those occurring late in the disease, where the benefit derived from the removal does not justify the operation. In fact, we must consider in every case whether we purpose to cause arrest of the disease, or whether we simply wish to make the patient more comfortable. Many, unfortunately, fall in the latter class. For the relief of pain, where the lesion is not entirely confined to the epiglottis, there is no measure to be compared to injection of the internal laryngeal with 75% alcohol. The injection is made just at the point where the nerve pierces the thyro-hyoid membrane. Failure will sometimes result from effort to inject the nerve, due, probably, to the alcohol not reaching the proper point. However, an occasional failure should not cause one to abandon such a useful procedure.

I have one accident to report, that of paralysis of one side of the tongue, which caused great inconvenience in both talking and eating. This lasted, with lessened discomfort, for a period of about six months. This mishap was due either to the fact that the landmarks were lost and the injection made at the wrong place, attacking the lingual nerve, or else the nerve took an anomalous course. The duration of the anæsthesia usually lasts for three or four weeks, though I have two patients under my care, one for a year and a half and the other for nine months, who required only a single injection. It is not likely

that the nerve remains anæsthetized for this period of time, but rather that the healing of the laryngeal lesion takes place during the time when the food is comfortably taken, and nutrition is thereby improved.

The technique I shall not go into, as it was fully described by Fetterolf in the Annals of Otology, Laryngology and Rhinology, March, 1912.

Solar therapy I have not tried in a sufficient number of cases to be convinced of its therapeutic usefulness.

For the treatment of the larynx in selected cases, the electric cautery is in my opinion of the greatest service. It is particularly useful in the sub-acute and chronic cases which need a fresh blood supply brought to the part to produce resolution and fibrosis. Dr. George B. Wood has shown by animal experimentation that the action of the cautery needle extends well beyond the point of the puncture. Microscopic sections of this tissue subsequently made, showed the disappearance of the tubercles. Ulcerations, if not too extensive, do well under this form of treatment. Large swollen arytenoids shrink markedly after a few punctures with the electric cautery. By this measure pain is relieved, and laryngeal obstruction requiring tracheotomy may be avoided. In my experience there has been no tendency to ulceration, with secondary infection at the site of the puncture, as might be expected. An exudate of fibrin is thrown out, which is protective, and a better blood supply is given, serving to prevent tissue necrosis. Finally, in a swollen and infiltrated condition of the epiglottis which is prone to produce great pain on swallowing, and which is seldom relieved by injecting the internal laryngeal nerve, the use of the electric cautery needle is strongly indicated. Strange as it may seem, the pain is greatly lessened, or entirely disappears after the use of the cautery needle. When the reaction has subsided, which is usually not marked, the epiglottis is noted to be considerably reduced in size. It is my custom to make about three punctures at each operation, with intervals of about two weeks, until the infiltration is absorbed, with the formation of scar tissue.

In conclusion I wish to emphasize the following points:

The importance of—

(1) Regular systematic examinations of the larynx in every case of pulmonary tuberculosis, in order that the diagnosis may be made in its incipiency, when most amenable to treatment.

(2) Regard with suspicion slight laryngeal symptoms in the tuberculous.

(3) Sanatorium treatment is desirable for the successful care of the tuberculous throat.

(4) Enjoin rest to the voice in the early stage of laryngeal tuberculosis, and during the active stage of all forms of the disease, except where the epiglottis alone is involved.

(5) In the subacute and chronic forms of the disease, local applications are helpful in arresting the progress of the disease.

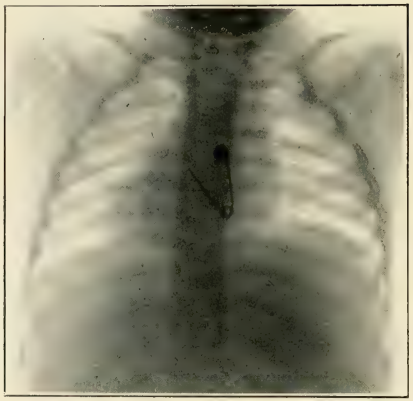


Plate 1 Case No. 1 Baby G. Age 14 months.
Diagnosis, Safety pin in œsophagus.
Result, Removed. Cured.

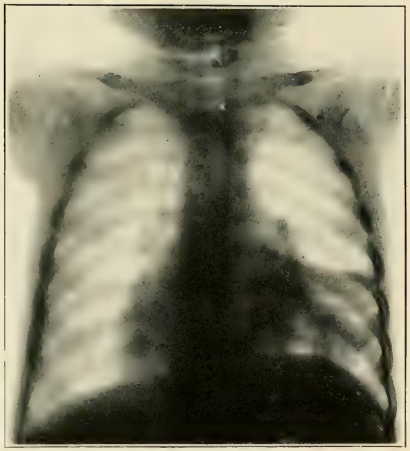


Plate 2 Case No. 2—M. C. Age 16 months.
Diagnosis, Pieces cocoanut right bronchi.
Emphysema upper lobe right lung.

(6) For the relief of pain, alcoholic injection of the internal laryngeal nerve should be tried.

(7) In certain selected cases, there is no form of treatment so efficacious as the electro-cautery.

DISCUSSION

Dr. J. P. Matheson, Charlotte: Dr. Greene's paper is entirely too good to pass without any discussion. It certainly has enlightened me in the treatment of laryngeal tuberculosis, and there is nothing I can add, but to compliment the writer.

Dr. R. W. Petrie, Charlotte: I notice the doctor recommended the removal of tonsils in the treatment of laryngeal tuberculosis in certain cases. I think we should be very careful in the selection of these cases for operation, as we do not wish to do anything to deplete these patients, or in any way lower their vitality.

Dr. Greene, closing the discussion: In reference to what Dr. Petrie mentions, we have to be very cautious in removing tonsils during the stage of activity in the lungs. We much prefer to use local anæsthesia in operating on a tuberculous patient.

Dr. M. C. Horton, Raleigh: Have you any choice of local anæsthetics?

Dr. Greene: I use novocaine, or what is now termed procain.

SOME OBSERVATIONS ON ENDOSCOPY. REPORT OF FOUR DIFFICULT CASES

C. N. Peeler, M. D.; C. C. Phillips, M. D., Charlotte

The field of Endoscopy has become one of great importance. The problems that develop in this branch of the specialist work are becoming more and more difficult. The cases are increasing in numbers very rapidly. These facts give my apology for presenting this paper. Ten years ago there were very few cases or they were not recognized, but today they are reported by the hundreds.

Before taking up Endoscopic work I thought the most difficult part of it was the introduction of instruments. It was considered a difficult task and, having accomplished this, the removal of the foreign body was then an easy thing to do. The operator only had to pass suitable forceps and deliver the intruder. The above conception was erroneous. Now, with the proper instruments to suit the individual case, the introduction is usually an easy task but the problem of the removal of the foreign body is very great and one which must be studied and a plan of procedure outlined before an attempt is made to remove it.

i. e., the surgeon must have a mental picture of the location, position and relation to surrounding tissues before he can successfully remove the foreign body without injury to the host. Just as the obstetrician studies the position of the fœtus in relation to the maternal parts, so must the Endoscopist study the position of the foreign body and the relation of its every part to the bronchus or œsophagus. To do this the X-ray is indispensable.

From the roentgenogram, the diagnosis of the opaque foreign bodies is not difficult, as we always get a clear shadow of these and it is only left for us to determine the nature of the object and whether it is in the air passages or the œsophagus.

Of the non-opaque foreign body the diagnosis is more difficult, but by giving special attention to accuracy in technique a positive conclusion can be arrived at. The signs of this condition as seen in the X-ray examination are few but when considered together are quite conclusive of obstruction, which is almost always due to the inhalation of some foreign substance, but not in every instance; as in one case we will report later. The signs as seen in the radiogram are: emphysema of the obstructed lung, with widening intercostal spaces, depressed diaphragm on the affected side and the mediastinal structures displaced on the opposite side. On fluoroscopic examination we observe the diphragm of the affected side is limited in movement or sometimes immovable, while that of the opposite side presents exaggerated movements. In the cases of longer standing, we find considerable thickening in the tissues of the obstructed lung, which usually goes on to abscess formation if the obstruction is not relieved. On account of overwerk of the unobstructed lung there is found increase in density of the bronchial markings.

From the physical examination (which I always leave to a competent specialist) we get the condition of the lung as to its function giving careful consideration to percussion and auscultation of the entire surface of both lungs.

CASE NO. 1. PLATE NO. 1.

June 15, 1921. Dr. Ashe's case. Baby G. Age 14 months.

Open safety pin in œsophagus just above diaphragm, point upward.

Removed. Cured.

At first attempt I endeavored to remove pin by point protection method of C. Jackson but failed to do this because it was against diaphragm closure of œsophagus. At second attempt I forced pin into the stomach and then turned it and removed it within the œsophagoscope.

CASE NO. 2. PLATES NOS. 2, 3 AND 4.

January 14, 1922. Dr. Houck's case. M. C. Age 16 months.

Five days before I saw child it was eating a piece of cocoanut and trying to get another piece from little brother. It choked on that in its mouth. Mother says it had a fit of coughing and was blue for something like a minute. It continued to have some coughing and had high fever Wednesday. Thursday was better; fever again Friday. I saw the child Saturday.

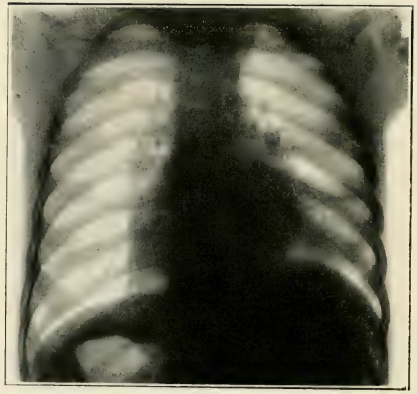


Plate 3—Case No. 2— M. C. Age 16 months.
Diagnosis, Pieces cocoanut right bronchi.
After removing pus by bronchoscopy.

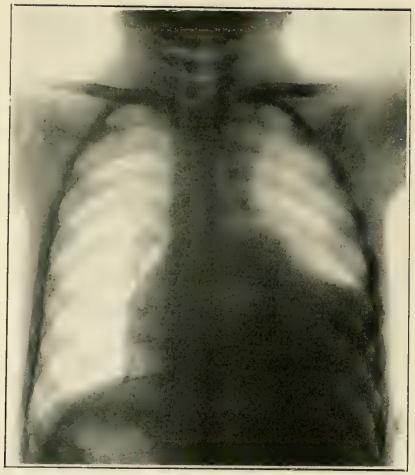


Plate 4 Case No. 2 M. C. Age 16 months.
Diagnosis, Pieces cocoanut right bronchi.
One week later showing abscess formation lower lobe right lung and removed by bronchoscopy.
Result, Cured.

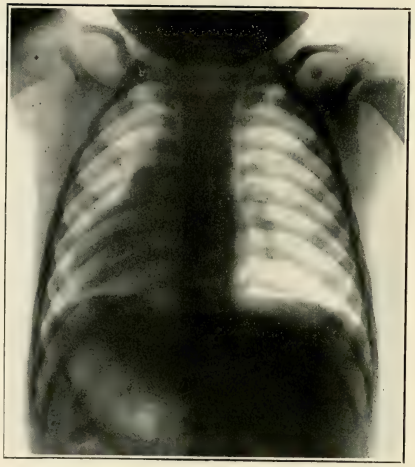


Plate 5—Case No. 3—C. L. Age 14 months.
Diagnosis, Peanut in right bronchus.
Emphysema right lung.
Result, Removed. Cured.

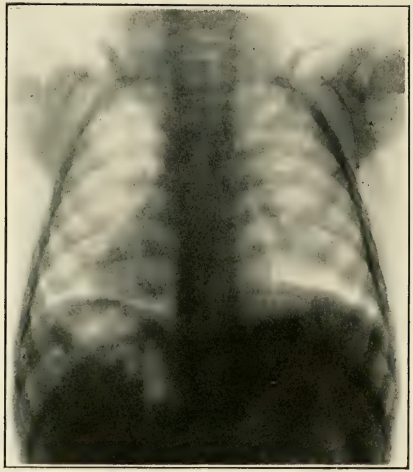


Plate 6—Case No. 3—C. L. Age 14 months.
One-half hour after removal. R. lung cleared up.

Examination—Temperature 101 degrees F. Occasional wheezy cough. Much mucous, W. C. 18,100. Rales over the lower part of right lung; upper lobe somewhat emphysematous; a few rales over lower part of left lung. X-ray revealed some emphyema in upper lobe right lung. Some clouding and thickening of middle and lower lobes.

Diagnosis—Foreign body, right bronchus, probably largest piece in upper stem bronchus.

A bronchoscopy was done; no f. b. found; much pus removed. A septic temperature was present for next ten days. A second bronchoscopy was done; no f. b.; great deal of pus removed. From this time, child began to improve. Four days later returned home. The last letter I had from Dr. Houck said the child had recovered entirely.

Remarks: This case, I think, had a number of small pieces of cocoanut inhaled, therefore unable to find them. During the second operation a small sponge was accidentally turned loose in the trachea. This was quickly removed from left bronchus. *An accident that should not happen.*

CASE NO. 3. PLATES NOS. 5 AND 6.

May 9, 1921. Dr. Brawley. C. L. Age 14 months.

Saw child May 9th, 1921. Twenty-four hours before child was eating some peanuts and while laughing inhaled one. A fit of coughing was immediately set up. When I saw this case it had a temperature of 103.8 degrees F., a wheezing cough, W. C. 14,600. By careful physical examination and study of radiogram we made diagnosis F. B. Right Bronchus.

A bronchoscopy was done, removing a large half peanut from right lower stem bronchus. This child was cured.

Next day had to do a tracheotomy on account of subglottic edema.

CASE NO. 4. PLATES NOS. 7 AND 8.

January 11, 1922. Dr. Yates Faison. C. H. Wt. 7½ lbs. at birth.

At two weeks of age mother noticed the child had some difficulty in breathing. One week later same difficulty, perhaps slightly worse, when she called Dr. Faison. Child well nourished, normal gain in weight; other examinations negative, excepting at each inspiration there was excessive movement of diaphragm; so much that the anterior abdominal wall was drawn inward and upward. During the next two weeks the child lost weight.

At five weeks of age a radiogram of chest was made.

The Wasserman was negative. Leucocyte normal.

Plate No. 7. The X-ray picture was typical of a foreign body obstructing the left bronchus. The lung was greatly emphysematous. The excursion of diaphragm was greatly limited on left side, etc.

Probable Diagnosis—Foreign body. Left Bronchus.

A picture was sent to Dr. Manges, of Philadelphia, and his opinion was there must be a foreign body in the left bronchus.

A Laryngoscopy was done (unable to pass smallest bronchoscope without trauma to larynx). There was no inflammation in the larynx nor trachea, no pus nor mucous present. The child did not have a cough, the temperature was normal. The child had difficult breathing, would become blue when crying. The question, what was the trouble with this baby?

At eight weeks the child died. P. M. revealed a congenital stenosis of left bronchus.

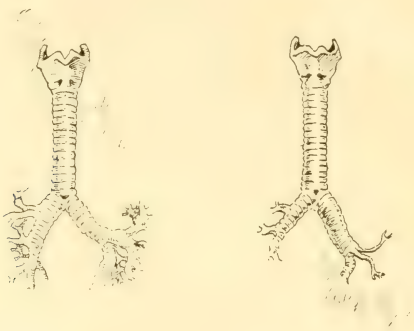


Plate 8—Case No. 4—A. Normal trachea and bronchi of child.
B.—C. H. Showing left bronchus larger than right. Two stenosed bronchi to upper lobe left lung.

Plate No. 8. This stenosis admitted a few bubbles of air at inspiration but closed at expiration. The child died from gradual asphyxiation.

In a review of literature for the past eight years did not find a similar case reported. Dr. Levy reports 22 cases congenital absence of one lung, 15 of these were left side.

DISCUSSION

Dr. John W. MacConnell, Davidson: There is one point that I would like to bring out, and that is, it is necessary to have only about one or two men in a section to do the work. The point I am making is this, there are not enough of these cases in any small area to keep a man busy enough for him to acquire the technique. Now, I tried bronchoscopy once, I worked with Dr. Johnson in Baltimore once, and then later I went to Pittsburgh to see Dr. Jackson do his work. Of course, you all know that Dr. Jackson is a wizard at this work, because he has acquired that technique by doing a great many cases. I got a set of instruments, and the only case that I ever had never paid me a cent. I venture to say that Dr. Peeler has never gotten enough money out of it to pay him for his time and trouble. The

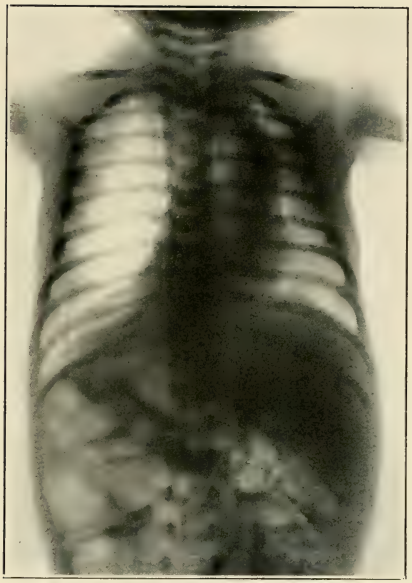


Plate 7—Case No. 4—C. H. Age 5 weeks.
Diagnosis, Congenital stenosis left bronchus.
Result, Death.
Showing emphysema left lung, all media stinal structures, including the heart, pushed far over right side of chest.

only patients I ever had, outside of one member of my own family, were charity cases. You can not keep up to the best, you can not support the bronchoscopy, you might say.

I want to record one other thing—so far as I am able to learn, the first pictures of foreign objects in the trachea in any of the Southern States were made by Professor Louis Smith, and he made that picture of a case of a little girl in North Carolina who had gotten a thimble in her windpipe, and he took, so far as I know, the first picture of a foreign body in the trachea in the South.

Dr. Peeler, closing the discussion: I have nothing further to say, gentlemen, except to amplify what Dr. MacConnell said about the class of cases coming to us usually being charity cases. But I recently read an article by a St. Louis man who said that if a man had the time and inclination to do this work, it is of benefit, even if of no monetary value.

Upon motion of Dr. J. P. Matheson, it was voted that the Chairman appoint a committee of five members of the Section on Eye, Ear, Nose and Throat, to study X-ray therapy in eye, ear, nose and throat work, and to report to the next annual meeting. Committee: Dr. J. W. MacConnell, Davidson; Dr. John B. Wright, Raleigh; Dr. O. C. Daniels, Goldsboro; Dr. Louis N. West, Raleigh; Dr. W. C. Horton, Raleigh.

Motion by Dr. M. C. Horton that the State Board of Health be requested to consider the devising of some means by which part of the money which is now being used for tonsil and adenoid work might be diverted and used for eye clinic work among the poor. This motion was defeated.

The following were appointed as a Committee on Relations with the State Board of Health: Dr. J. P. Matheson, Charlotte; Dr. O. B. Bonner, Raleigh; Dr. H. H. Briggs, Asheville.

Dr. J. B. Greene, of Asheville, was elected Chairman, and Dr. H. L. Sloan, of Charlotte, Secretary, for the next year.

CHEMISTRY, MATERIA MEDICA AND THERAPEUTICS

E. J. Wood, M. D., Wilmington, Chairman

Dr. E. J. Wood, Chairman, Wilmington: The Section on Chemistry, Materia Medica and Therapeutics will come to order.

In giving over this section to a consideration of malaria it is hoped that the few papers will leave room for the valuable discussions which should be forthcoming. No body of medical men in this country should be better able to discuss the subject for no other like group has had more practical experience with it, and I say this to our shame, for as physicians we should have demanded its extermination many years ago. When we consider the progress North Carolina has made in industry, in education, in wealth and in the building of roads (as important in our time as the forerunner of progress as were railroads in our grandfathers' time) we must acknowledge that the medical part of progress so far as concerns the great preventable disease, malaria, remains a reproach to us. We have that contempt bred of familiarity and have looked on malaria like the poor: a natural and unavoidable thing. Rome did the same thing and today we are told that her decadence was due to malaria. Some even think that the fall and decline of Greece was of the same source. When Manson, Laveran, Ross, Gorgas, Sambon, Smith and LePrince solved the problem for us it was reasonable to expect that our progressive Anglo-Saxon state would apply this free gift and rid ourselves of the greatest of all our physical curses not even excepting tuberculosis; but what have we done? We will be told today of the most important movement, and it is an admirable piece of work Dr. Taylor will record, which should be epoch-making. What he and his associates have done in Lenoir County must, and will be, done in other counties but, I ask, how long will it take for us, the real guardians of the health of the people of North Carolina, to wake up and save our people from death and our profession from shame.

For my own part I would enter a plea for a better understanding of the clinical side of the question. The experts in malaria almost without exception have been great entomologists, or great epidemiologists or great sanitary engineers—few indeed have been great physicians. The manifestations of malaria are almost as protean as of syphilis. We feel that we must know syphilis, which is as certainly preventable and more specifically treated even than malaria, but of the latter disease we are content to know that it causes enlargement of the spleen, chills and fever, anæmia and a few seem to appreciate that it is characterized by parasites in the blood! The very fact of our ignorance of malaria has resulted in its being a cloak to cover our negligence or indifference of many things. If we could remember that chills resisting vigorous quinine medication of a week is not malaria, that a leucocytosis is not caused by malaria, that the presence of rales in the chest and tubercle bacilli in the sputum do not indicate malaria,

as absurd as it sounds, we would be making real progress. If we could get the public away from those popular ideas of "being full of malaria," or having a "touch of malaria," or being "bilious" because of a "system full of malaria," and let them look on malaria as an infection borne by the mosquito "who loves darkness rather than light because his deeds are evil," therefore he goes about seeking whom he may devour not by daylight but in the dark and with little ado about his dark doings, we could get somewhere.

There is a great opportunity for clinical research in eastern and even central North Carolina in malaria. It should be done quickly for our children will not submit to our complacency but will stamp it out promptly as soon as we can be shelved underground. We have a few remaining years for some real intensive clinical investigation and the material is as abundant to our hands daily as material is in any of the great hospitals in any common disease. We surely cannot plead scarcity of material nor of opportunity. If we knew more about malaria we would not have to call tuberculosis malaria during those precious months when healing of the pulmonary affection could be brought about. We would not call liver abscess malaria, nor would we call typhoid malaria until after the whole neighborhood had become infected. If we knew malaria better we would have, in all probability, a chance to remove real foci of sub-infection and prevent many useless tonsilectomies and also save many useful teeth. We might be able to supply some of the great gaps in the explanation of the etiology of many of the degenerative progressive destroyers of life. Certainly we would increase the efficiency of our people in a very real way and increase also their resistance against many other debilitating diseases. A patient who contracts pneumonia, on top of a chronic malaria has a greatly lessened chance for recovery, as I have seen with my own eyes. A chronic malaria victim can withstand only very poorly a defective diet and the odds are all in his favor for developing pellagra. And so it goes through the whole gamut of diseases.

We are even deficient in our knowledge of the treatment of malaria. There are still two camps at least in North Carolina on the treatment of malarial hemoglobinuria. I have tried to have today two papers on this subject by two men of long experience and decided views. I believe they are right in their methods and I would prefer to trust them with my life if I had the disease rather than the other camp. But I sincerely trust that the other side will be presented in the discussion. Those of us who may believe in quinine in spite of the hemorrhage may be wrong, and if we are should be shown for the benefit of our people and our State. It is a regrettable fact that there is still reason for us to understand this awful type of malaria which Dr. Thompson will tell us is the accumulation of many previous attacks of malaria, all of which, or any of which, could have and would have been cured, if the patient had been aware of the need and the doctor had been strictly "on the job," remembering that there is as much or even more reason for persisting in the treatment of malaria after all symptoms have disappeared than there is for treating syphilis after the secondary eruption has faded. If the malaria had

been treated the hemorrhagic condition would not have occurred, but this was only one victim of our indifference—the real tragedy is the fact that from this one neglected case scores, it may be hundreds, of cases of fresh infections have been carried by the ubiquitous anopheles.

Gentlemen, it is a homely subject and it has few dramatic phases but it is our closest enemy and the greatest enemy of our present race. What are we going to do about it?

THE LEUCOCYTES IN MALARIA

Edward J. Wood, M. D., D. T. M. (Eng.)
Wilmington

It is universally recognized that the mere failure to find the parasites of malaria in the peripheral blood does not exclude malaria. One of the problems is the determining when a search of the blood is thorough enough to justify a negative report. It is often possible to overlook parasites even when abundant especially when very young. It is in such cases that an indifferent stain is such a grave source of error, or it may be a good stain with faulty technique responsible for the poor result. Staining is a thing which must be done with care and a degree of skill must be developed in each individual worker or it becomes a curse rather than a blessing. The individual should select a stain and cling to it using no other and thereby perfecting himself in the dilution, the length of time for staining before adding water and the length of time after and finally in the method of washing off the stain after the process is complete. In the London School of Tropical Medicine the only eosinate of methylene blue used routinely is the Leishman stain and it seemed to me to have many advantages over the stains of that group ordinarily used in this country. Students soon acquired a marked degree of skill in its application and I saw the parasites of malaria by its use in a way hitherto unknown to me. I am still using it and believe that because I have perfected the technique in its use that I will see parasites which otherwise would be passed over.

The use of the thick film method has been emphasized recently and seems to have many advocates. It is likely that in the hands of an accomplished expert it may give satisfactory results. I have seen it employed and have tried to learn to recognize parasites so mounted from blood actually swarming with them but I have not succeeded. It is only in specimens with very few parasites that the method could be justified and in such cases the element of error is so great that I am unwilling to accept a report of the presence of parasites based on such an examination. I am convinced that I have had positive reports when there were no parasites.

There can be no doubt of the practical importance of detecting infections when the number of parasites in the peripheral blood is very small. It seems altogether probable that the number of parasites in the peripheral circulation is not an accurate index of the degree of

infection. It is a well known fact that many things will precipitate an outbreak of the symptoms of malaria. Following surgical procedures the surgeon is often made anxious by a rise of temperature after a chill. A blood examination will often reveal no disturbance of the leucocytes thereby ruling out infections of the pus-producing type. But it is not possible in these cases always to find the parasite of malaria. Any method of diagnosis other than the finding of the paracite would be helpful in this class of cases for in many ways the need is more urgent and the problem more difficult. Labor will often precipitate an outbreak of malaria when the infection has been lying dormant for many months. It is not a very rare thing to find malaria parasites when making a routine examination of a stained blood film even though there may be no symptoms at the time and often no history of chill or fever. But may not these parasites be producing other more obscure symptoms as neuralgias as well as a long line of vague and indefinite symptoms which usually go unrecognized? It is no wonder that the older practitioners in certain sections of this State have fallen into the questionable habit of attributing at least a certain amount of credit to malaria in all febrile processes, for there is much evidence that this infection affects in more or less degree many other conditions. As many of the older men were deprived the help of modern microscopic aids it is no wonder that all obstetrical cases were given quinine, that all typhoid fever was treated with large doses of quinine, among other things, and while in the latter condition there were many and varied lines of treatment still quinine always formed the sheet anchor.

The degree of accuracy of a malaria survey when the statistics are obtained by an examination of the blood of a number of hundreds of people selected more or less at random and using the thick film method is, to my mind, open to criticism. I believe that in this plan many cases are passed over and I am not convinced that all cases recorded as positive are really malaria.

Some years ago while studying my first case of what was afterwards recognized as pellagra, I was startled to find the peripheral blood literally swarming with benign tertian parasites. The patient was far advanced in the pellagrous process and the condition was recognized as one from which there had already been many deaths though we did not know how to classify it. In the light of the fact that the finding of malaria was the first definite thing to occur in our study we were disposed to make more of it than it really deserved. The patient was not given quinine at once but a careful temperature chart was kept and a record made every three hours. With each temperature record a number of blood films were made and these were carefully marked. There was no rise of temperature at any time, in fact, the temperature was subnormal, but in each slide large numbers of benign tertian parasites were found. After a number of days there was a chill and a sharp rise of temperature. We very naturally expected that the benign tertian infection was responsible but examination of the blood revealed the fact that at the time of the paroxysm quartan parasites predominated the slide and the number of benign

tertian parasites was notably small. At that time (1907) this was the only case reported in this country of a combination of benign tertian and quartan parasites. It may interest the reader that this finding was confirmed by Dr. W. S. Thayer who examined the preparations. It will be recalled that his lectures on malarial fevers was an epoch-making work in this country and we owe much to it.

This case is mentioned in some detail for obvious reasons. We are muddling the whole question of malaria most miserably. We are counting many pus conditions malaria and loading the victim with quinine to his discomfort and are doing him no good by it and are only succeeding in confusing the situation. We are failing to detect malaria in non-febrile conditions. We are overlooking the insidious danger of a chronic infection of malaria but are having teeth removed on the slightest provocation. I startled Sir Patrick Manson recently by the statement that I had attended every prominent rice planter on the lower Cape Fear in recent years and that they all died from chronic nephritis and that it was my opinion that chronic malaria had been a large contributing factor as all of them had suffered much from repeated outbreaks and one of them, he, himself, had treated. Many of us have seen acute nephritis of a hemorrhagic type which seemed to justify a connection with malaria in etiology.

Several years ago C. F. Strosnider presented before the State Medical Society a valuable contribution on the relation of the infection of malaria to kidney disease. That paper at this time would be particularly timely. While there is a strong probability that malaria plays a much more important part in the causation of many chronic disorders we must all recognize how many there are who have a tendency to "hide behind" malaria as an explanation of some inexplicable condition. It is often ludicrous to see how some of our friends in non-malarious sections pounce down on the patient from a supposed malarious region and attribute the obscure symptoms definitely to the action of the poison of malaria. This would not be objectionable to us were it not reinforced by a positive report on parasites sent in from the laboratory. We have every reason to know that we overlook many things but we take exception to many of these reports because they are not always dependable. Those who have worked much with malaria will recognize just how many pitfalls beset the way of a technician of small experience eager to find malaria. How often does an inexperienced person count a platelet when overlying a red corpuscle a parasite of malaria!

It is obvious that some method of diagnosing malaria by the blood without the finding of the parasites will be welcomed. We have had such a method for a number of years but like many other good things it has suffered from innocuous desuetude. The following table prepared by Billings and published in Thayer's Lectures on Malarial Fevers will be recalled by many workers in malaria.

	NORMAL	MALARIA
Small mononuclears	18 per cent	16.90 per cent.
Large mononuclears and transitionals	6 per cent	16.90 per cent.
Polymorphonuclears	74 per cent	65.04 per cent.
Eosinophiles	2 per cent	0.96 per cent.

In the London School of Tropical Medicine it is taught that the normal proportion of the large mononuclears and transitionals varies from 5 to 10 per cent, and if the count rises above the latter figure it is presumptive evidence that the patient has malaria. There are certain conditions which also cause this same increase in the large mononuclears and they will be discussed later. Suffice it to say at this point that in this region in the case in which we might suspect malaria there would be no reasonable basis for confusion.

Thayer refers to an interesting case worthy of note in this discussion. It was one of leucocytosis in pernicious malaria which an hour before death showed fifty thousand leucocytes to the cubic millimeter. In spite of this the differential count maintained the usual proportions for malaria. It was as follows:

Large mononuclears and transitionals	18.4 per cent.
Small mononuclears	23.0 per cent.
Polymorphonuclears	58.6 per cent.

Illustrating what we may expect to find in this class of case if a differential count is made I cite the following case:

A young man of 21 years who thought his digestive apparatus was needing attention. For some weeks and possibly months he had not been up to the mark though there was nothing definitely wrong to his knowledge. He had had no fever. His differential count was as follows:

Large mononuclears and transitionals	14 per cent.
Small mononuclears	22 per cent.
Polymorphonuclears	64 per cent.

In one large mononuclear I saw a beautiful demonstration of pigment blocks and granules which it seemed justifiable to regard as of malarial origin.

Detection of phagocytosis of the remains of parasites is one of the advantages of a careful differential count. It is true that one seldom finds what one is not looking for but in the classification of a mononuclear cell it is very easy to add to the routine a hasty inspection of the light periphery of the large cells for the deeply colored pigment material. Thayer notes that mononuclear phagocytosis was more often found that polymorphonuclear and adds that in fresh blood this phagocytic action is much more commonly seen in the latter and that the amœboid movement of the mononuclears was very feeble. For practical purposes the place to look for phagocytized remnants of parasites is in the large mononuclears.

As indicated above chronic latent malaria may influence the course of many disorders. Recently I saw with Dr. Cyrus Thompson such a case in which the diagnosis of malaria was based on the increase of the large mononuclears to 24 percent. The diagnosis of gall stones had been made but we feared the addition of malignancy. No evidences of parasites were found. The patient had lived in what our northern friends would regard as a malarious neighborhood but had not manifested any symptom of malaria in many years. Treatment based on this conclusion was instituted and there was an immediate improvement with rapid increase of weight justifying an end to our fear of malignancy.

Increase in the proportion of large mononuclear leucocytes and transitionals occurs in the very beginning of the infection and will persist for many weeks after the last symptom regardless of the treatment or in the absence of all treatment.

It will be recalled that post-febrile measles shows an increase in the large mononuclears. There is no reason why this should cause confusion in a consideration of the diagnosis of malaria. The same increase occurs in typhoid and this is a more important source of limitation to the value of the test. The increase also occurs in several protozoal infections. Among these Stitt mentions kala-azar, trypanosomiasis and amœbiasis. So far the only one of these to cause confusion here will be amœbiasis and the dysenteric symptoms should prove sufficient indication for an examination of the feces when amœbæ or amœbic cysts can be readily detected. It should be recalled that there occurs a type of looseness of the bowels due to malaria. In the diseases of filterable viruses there occurs an increase in the large mononuclears and the same thing also in yellow fever. In Banti's disease there is an increase of the same sort. The increase in Hodgkin's disease is of the transitionals.

For some time I have been making routine differential counts regardless of the condition or the diagnosis. The result has taught me that we are overlooking a large percentage of the cases of malaria which in the past we have declared free from malaria because of the failure to find parasites even after repeated examinations when no quinine had been administered. It is worthy of note that the taking of quinine which prevents usually the finding of parasites does not alter the proportions of the leucocytes and the increase in large mononuclears remains to us a helpful guide. This is a matter of great importance because most patients who treat themselves before consulting a physician usually select quinine as the remedy for all ills.

Dr. Cyrus Thompson, Jacksonville: Mr. Chairman and Gentlemen: I know nothing of malaria in a laboratory way. Dr. Wood, in presenting the matter of the latency of malaria, requested that I report on two cases occurring under my observation in my own county, cases that had an excessive number of large mononuclears. One of these cases was myself, the percentage being somewhere between twenty-five and thirty. I was very much out of fix and I went to Dr. Wood to try to find out what was the matter with me. I don't know, and he

doesn't know, that we, either one or both together, ever determined precisely what was the matter; but finding this excess, he put me on quinine sulphate in hydrochloric acid solution, which I took three times a day for a number of weeks. At last we got the large mononuclears down to normal; I was well, and I have no doubt but that the quinine was of immense advantage to me.

The other case was the case of my brother-in-law, who had also an excessive number of large mononuclears. I sent him down to see a surgeon one time for a gall-bladder trouble, and he not wanting to operate for the trouble, because of age and build, I afterward sent him to Dr. Wood, and he, on the same basis as he had with me, determined that this man also had chronic malaria, and we gave him the treatment. The gall-bladder trouble gave way. The disappearance of the trouble was due to the quinine. Whether he had malaria or not we did not certainly know; but when you have an excessive amount of mononuclears, anti-malarial treatment with quinine is beneficial or curative.

Gentlemen, I wrote the following paper just because Dr. Wood requested me to do so, and I desired to please Dr. Wood.

ON THE NATURE AND TREATMENT OF HEMORRHAGIC FEVER

Cyrus Thompson, M. D., Jacksonville

When I was a callow college lad academic curricula had more regard for classic sentiment and less for business and the material sciences than our institutions exhibit these latter days, all students who aspired to become educated gentlemen had to study Latin and Greek. To be educated gentlemen then it was necessary, if not to have, at least to have had, a knowledge of these ancient classics. I was, therefore, educated according to the character of my time. I read the orations of our eloquent friend, Marcus Tullius Cicero, whose hatred of Catiline, poor senatorial scoundrel, was no less truculent than the hatred of Demosthenes toward Philip of Macedon. I recall Cicero's Tusculan Disputations. I read laboriously his charming dissertation De Natura Deorum. But I remember nothing very definite about the nature of these forgotten gods. I gathered from my reading, however, that gods, whether Roman, Scandinavian, Hindu or American, resemble their worshippers. Men approach the likeness of the object of their devotion if they comprehend the nature of these objects. Not understanding them, they fashion their gods like unto themselves. Gods, persons and things, in other words, are to us not so much themselves in the absolute as our peculiar selves in fact. With mirrors or without, we are constantly seeing our dear selves—just as the sun, for all the darkness in the universe, sees nothing but his own radiance wherever he lifts his eye.

Pardon these words of philosophic prelude: I am generously trying to justify your mental attitude if you disagree with me in this brief discussion of the Nature and Treatment of Hemorrhagic Fever.

As to the nature of the malady, I may be wrong when I agree with our neighbors in a South Carolina town who, by way of euphemism and soft impeachment of the health of their community, call it Extreme or Terminal Malaria. As such, however, I have seen it through an experience covering some forty fleeting years. And so it now appears to the vast majority of professional men who have experience with it.

I am aware, of course, that some reputable and observant men see the malady as a distinct non-malarial entity. Quite recently a neighbor of mine held and advocated this view; and some recent textbooks discuss it under the caption of Blackwater Fever apart from their discussion of malaria. My neighbor's opinion was based upon his own observation. He had seen the malady mainly in communities where, they declared, malaria was not very troublesome and into which the doctor was seldom called to treat malaria.

Admitting his argument as a statement of fact, to me it is rather convincing proof of the malarial nature of Hemorrhagic Fever. Sharply acute attacks of malaria—the severe chill, the high fever, the aching limbs and breaking back and splitting head—these drive the patient to prompt and effective treatment. From this type of malarial attack, little of aftermath is to be expected or feared; its severity makes it benign. In some communities, this type prevails; in others, the type is less acute, and unfortunately too often considered negligible. The attacks are ignored or imperfectly treated. They recur for this reason, and add to their destructive work with every coming. The condition so made light of, the doctor is not called until the hemoglobinuric culmination of an insidious series of neglected recurrences alarms the patient, when too often the undertaker should be the doctor's chauffeur.

Hemorrhagic Fever is as preventable as smallpox. It is a disease not of the careful, but of the careless.

I think it may be said without fear of contradiction that Hemorrhagic Fever, (Hæmoglobinuric Fever, Blackwater Fever, or Malarial Hæmoglobinuria) is never seen as a first attack in a person previously well, but has always behind it a history of repeated neglected or ill-treated outbreaks of malaria. For its development, time and negligence are required. It is never the expression of a new infection. This is true whether the hæmoglobinuria occurs in July or in March. Not every such history, of course, eventuates in hæmoglobinuria, but whenever hæmoglobinuria does come, it comes with such a history always. One severe lesson I derive from this: every attack of malaria is of most serious import, and the mild attacks, it may be, most serious of all. "He that hath ears to hear, let him hear."

Incidentally, I remark that I have never seen a malarial addict with a corn-pone spleen have Hemorrhagic Fever. In all cases, of course, there is enlargement of the spleen; but when I can lift up, so to speak,

the heel of the spleen from off the sigmoid flexure, I confidently assure the victim that he will safely enjoy poor health for a very long time.

As to the nature of Hemorrhagic Fever, therefore, what more shall I say? Its nature is the same as the nature of every other malarial manifestation: it is a parasitic destruction of red cells and the liberation of hemoglobin into the blood current. In quality, all malarial attacks are the same; they differ in quantity and in the efficiency of the liver at the time of the outbreak. Every malarial fever, in other words, regardless of its lightness or its gravity, is hemorrhagic. Note the pallor of the face the day following the first chill—no other malady shows so sudden and marked destruction of red cells and waste of hemoglobin. But the liver takes care of the liberated hemoglobin and it does not appear in the skin or the urine. We note only the pallor and the lack of zest. Another time the destruction may be more or the liver less active; there is decided hæmoglobinæmia, the liver barely converts the hæmoglobin into bile pigment, the skin is jaundiced in consequence, but no hæmoglobin appears in the urine. Again, the excess of hæmoglobin is more than the liver can play clearing-house for, and the burden of the removal of so much toxic debris falls heavily, if not disastrously on the kidneys. Behold now the frightful hæmoglobinuria, the dirty, yellow skin, the pitiable plight of this miserable victim who had been careless of the day of small beginnings.

So much for the nature of Hemorrhagic Fever. What now of the treatment? Its prophylaxis may be perfect; but that neglected we must treat it, when it comes. All malarial expressions being essentially the same, the remedies are the same for all malarial expressions. It matters not whether you have afebrile periodic depression and aching, afebrile periodic neuralgia as the sun-pains of the old folks, or painful and febrile attacks, intermittent or remittent, with normal urine or hæmoglobinuria, the remedies for malaria are the same, the details and adjuvants in treatment varying with the gravity of the condition present.

What then are the remedies for malaria? First, the cinchona alkaloids and their salts, or, as we commonly say, quinine. Second, Methylene Blue. Third, Coacodylate of Soda. With or preceding the first of these, comes calomel, of course, for its hepatic effect. For on account of the hæmoglobinæmia always present in whatever degree and other toxic substances, the liver must always be our best friend at court, and is always deserving our carefullest attention. As alterative and reconstructive tonics, iron, iodine, Fowler's solution and the bichloride of mercury may be of service in debilitated conditions following after.

Time will not permit me to go into the details of treatment that individual circumstances and developments in a case might reasonably suggest and require. Upon these things we are agreed. The mooted question is as to the giving of quinine in Hemorrhagic Fever. In general, therefore, let me say that if I were called to treat a case, I should allay my patient's fear, relieve his pain, and measurably control his miserable recurrent vomiting with necessary hypodermics of

morphine with atropine. I should give him from ten to twenty grains of calomel with an excess of soda. I should follow this in a few hours with a copious saline. I should repeat the calomel and saline whenever repetition seemed advisable. For the purpose of stimulating elimination by the kidneys also, my administration of water would be limited only by gastric tolerance. I might encourage renal output, if failing, by hypodermics of pituitrin. I have seen this relieve anuria of twenty-eight hours duration. And of anti-malarial remedies by the stomach, I would give or try to give, two grains of Methylene Blue every six hours. This I would give in the form of the Methylene Blue Compound or ordinary gonorrhea tablet. It is more effective in this form and better tolerated by the bladder. If it was ungrateful to this organ, I should reduce my dosage. With the needles, I should give five grains of Cacodylate of Soda daily for three days, and then on alternate days for a time. Would I give quinine? If my patient had fever I would give him quinine p.d.q.—which by interpretation is to say, as soon as I could, indifferent whether his urine were as clear as the icicles melted that hang from Diana's temple or murky as a spoilt specimen of Welch's kickless Grape Juice. Time was when I would not have said this or behaved this way. Not many years ago, I would have withheld quinine until my patient, dead or alive, was in less urgent need of it. Meantime I would have implored for him the benign intervention of divine grace, while I, myself, in ignorance what to do, sweltered between hell and the iron-works.

I am aware that many capable men would now take issue with me and follow a contrary course. They even tell me that attacks of hæmoglobinuria not infrequently are precipitated by the administration of quinine to one suffering with chronic malaria; that the remedy, in other words, may cause the disease against which it is given and for which it is universally recognized as most nearly a specific. So easy it is to convert a post hoc into a propter hoc. If the quinine had been given earlier, the imminent cell-destruction by parasites resulting in hæmoglobinuria might have been prevented; given too late to arrest damage already done, why should the hæmoblobinuria not appear, why should quinine given so late be charged as the cause of it, and why should quinine not be given none the less to prevent further damage that otherwise will be done? These hæmoglobinurias from destruction already done are scheduled to come and will come, quinine given or not it is manifestly unfair to charge quinine with causing an injury which it had been denied reasonable opportunity to prevent. Whenever, therefore, there is febrile manifestation of malaria, quinine should be given abundantly without hesitation or delay. I have seen it withheld for fear it would precipitate hemorrhage, and directly the hemorrhage came without it. I have withheld it and seen the hemorrhage continue fifty-odd hours. I have administered quinine copiously and seen the hemorrhage cease in twenty-four hours.

Following this course, I am giving my patients a reasonable service. The mortality with quinine is very much less than without it.

Quinine holds its place as our nearest specific remedy in all forms of malaria; but when insufficient dosage has been given and the parasite in some chronic conditions is said to be quinine-fast, then Methylene Blue is an efficient adjuvant if not a better remedy.

But how shall quinine be given when the nausea and vomiting characteristic of the disorder makes oral administration so uncertain? If it is given by the mouth the patient, given water and soda, will give you a clean stomach, whose recalcitrance you will control by hypodermics of morphine. For a time I deceived myself with so-called hypodermic quinine—intra-muscular injections of 7½ grains of quinine dihydrochloride in 1½ mils. of solution. We must remember that, in many cases of Hemorrhagic Fever, the parasites all seem to be destroyed with the explosion, the patient sweats, the fever falls, and is gone in a day. In one such case I gave 30 grains intra-muscularly in four hours while the fever was high and the urine like abundant smoky poke-berry juice. Next morning the fever was gone and the urine was clear. On the evident efficacy of this method, I congratulated myself. I had that good inward feeling noted of our little Mother Goose friend, Tommy Horner. Later I found that I had embossed my patient's gluteal region and added to his assets by bestowing some perfectly good quinine where moths could not corrupt, nor thieves break through nor steal; nor could it leave the seared confines of its resting place to enter the waiting, waltzing circulation. Done aseptically, however, with a long needle straight down, there is no danger of abscess or other untoward event. It remains quietly with small inconvenience where you put it, suggesting the profound serenity of a succulent cherry hid deep in a fancy chocolate drop. If worthless to the patient, this method of administration is helpful to the family; they feel that you are doing all that can be done, that you are up-to-date and abreast of the times, notwithstanding the site of medication. To comfort the family sometime when everything seems to be going dead-wrong, I may give hypodermic quinine again. If then suffering the ennui of defeat, I shall inwardly ask myself what's the use, I shall sorrowfully look my anæmic friend in the face and recall the fate of the Yankee bummer who just after the War between the States, was killed and buried seclusively in the terebinthinate wilds of Georgia. Some years afterwards, a hunter came one day upon a mound, evidently of human sepulture, hid deep under sighing pines. A lightwood board stood at the western end of the grave. Rude lettering was carved upon the board. After some tedious effort, the lone hunter triumphantly read:

> The Yankees came, a murderous band,
> To take from us our Southern land;
> Behold this lone sepulchral spot—
> 'Tis all that this damned Yankee got!

Abundance of land, but of what use to the Yankee? Occupying only six feet by three, he could not grasp an inch of that. Your canal zone full of quinine and none in your blood, how are you benefited by this method of administration of quinine?

Another method of administration I have tried, of which I sadly confess I am no more enamored, to-wit: the intravenous injection of 5 cc. of solution, containing 7½ grains of the dihydrochloride. By whatever route given, quinine is a remarkably irritant drug. But if quinine by the needle in either the muscle or the vein, were systemically available, then the needle for evident reasons were the method of choice. But solutions of this strength thrown under the skin will invariably cause a slough; thrown into the muscle, they wall themselves in; thrown into a vein, they cause a thrombus at least. You could not inject the same vein again tomorrow; it is obliterated by its use today. You might make use of it again in a week, the thrombus perhaps liquefying in that time, your patient living or dead. But there could be no systemic effect of the quinine until it went freely into the blood current. This it could not do so long as it was enthralled in the thrombus. To be of service, the intravenous route must have for its use a solution much weaker and therefore more acceptable to our liquid flesh than I have had opportunity to use.

Out of my own experience, therefore, I am persuaded (but every man sees his gods with his own eyes) that the best of all routes for the administration of quinine is by the mouth. I give 5 grains every two hours, or ten grains every four hours in one twelve hours out of each twenty-four—that is, forty grains a day, until the fever is gone and the temperature is subnormal for a day or two. For certainty of effect, I prefer to give it in solution. I give the sulphate with 1/3 minim of hydrochloric acid to the grain dissolved in dram doses of Elixir of Lactated Pepsin. I usually flavor the solution with Fluid Lavender Compound, and I would add to this a modicum of deodorized tincture of opium but for the peskiness of narcotic restrictions. Opium would add not only to the tolerance of the mixture and the comfort of the patient, but also to the efficacy of the quinine.

Dr. Wood, Chairman: The next paper, "The Practical Management of Hemorrhagic Fever," by Dr. L. D. Bryan, of Sneads Ferry, is the result of many years of the same sort of common sense observation on the part of Dr. Bryan as that which Dr. Thompson has made.

THE PRACTICAL MANAGEMENT OF HEMORRHAGIC FEVER

L. D. Bryan, M. D., Sneads Ferry

In the practical management of hemorrhagic fever we have to consider: (1), The cause of the disease; (2), The severity; and, (3), The resistance of the patient. To attempt to plan a fixed routine of treatment for every patient alike is quite as narrow and silly as it would be to treat empyema with a routine treatment planned for pneumonia; although we have a so-called specific for malaria which is usually considered the exciting cause of hemorrhagic fever, but have no specific for pneumonia which is usually the exciting cause of empyema.

In mentioning the cause of hemorrhagic fever I shall distinguish between (a) hemorrhagic fever or hemoglobinuria caused primarily by malarial plasmodia and, (b) hemoglobinuria caused by ingestion of quinine when this drug is administered in the treatment of simple malarial fever. Since quinine hemoglobinuria is relatively rare and much less serious, I shall confine this paper mainly to malarial hemoglobinuria which is perhaps a more appropriate title than hemorrhagic fever. Predisposing cause is mainly chronic malaria, improperly treated malaria, and lowered vitality of patient. As to the real cause of the histologic and pathologic changes which take place in the blood, liver, kidneys, etc., I shall simply state that it is well, in the management of these cases, to bear in mind that havoc is being wrought in the cellular elements of the blood especially and that the liver and kidneys are both overburdened seriously; and in every case we should think of these organs as likely to become almost suddenly and totally functionless. And because of this fact we must take the best possible care of the liver and kidneys from the beginning of treatment, selecting drugs and food as well as hydrotherapeutic measures to this important end. Malarial hæmoglobinuria may be differentiated from quinine hæmoglobinuria, by the greater severity of the former—ague very severe and continues from one to several hours, urine is often of a more dense nature and bears a greater resemblance to blood, jaundice is more marked and usually there is more evidence of spleenic tenderness and enlargement and often hepatitis. (I had one case in which quinine decidedly aggravated the spleenitis.) Then the history of previous persistent malaria in the former type, and of large doses of quinine taken in less than twenty-four hours of the appearance of hæmoglobinuria in the latter. The microscopic blood examination should always be made to determine the prevalence of malaria organisms, as well as, the proportionate destruction of red blood cells. Too, we have greater shock and more pronounced anemia in the cases which are primarily malarial in origin. If quinine be discontinued for twenty-four hours hæmoglobinuria will clear up if due to quinine: then repeat the quinine and if hæmoglobinuria returns in several hours, we know it is quinine hæmoglobinuria and quinine must be discontinued, at least in curative doses. We may, however, build up a quinine tolerance by giving one-half grain of the hydrobromide or hydrochloride per mouth three times a day for two or three days, and gradually increasing one-half grain per dose every two or three days until curative doses may be given without producing hæmoglobinuria. I have had no deaths in the few cases of quinine hæmoglobinuria which I have treated although a moderately severe malarial infection was evidently present in each case. In the more severe type of cases the patient should be seen and thoroughly examined at the earliest possible moment, and proper treatment quickly instituted. My experience although limited to not more than twenty-five cases of hemorrhagic fever has convinced me that in the severe ones, especially the truly malarial type, immediate and, I may say, heroic treatment is necessary to get best results; for we are dealing with a very destructive and serious disease.

The mortality in twenty-two cases was forty-three per cent in the seven cases treated without the intravenous injections of quinine dihydrochloride, and nearly nineteen per cent in those treated with intravenous injection of quinine dihydrochloride. Age seems to have little influence in the occurrence of hemorrhagic fever, although I have had no case younger than four or five years. Mortality is higher in the aged, especially those with either functional or organic heart or kidney disease. While it may not be more difficult to control paroxysms and hemaglobinuria in the aged, yet, even after these are controlled, patients are apt to succumb in a week or two; because of cardiac or kidney complications. Of my two cases above sixty years of age, both were fatal; one, an alcoholic, was promptly given quinine dihydrochloride intravenously and lived eight days; the other was not given quinine dihydrochloride promptly and died in four days.

The main issue in the beginning in so far as drugs are concerned is quinine. Of course, these severe cases should have prompt supportive and symptomatic treatment with the onset of the ague and hemorrhage. Morphine and atropine should be given freely to shorten ague, relieve shock from the attack, as well as, the mental shock which many patients experience when they know their own blood, as they see it, is pouring from them in such large amounts.

Quinine dihydrochloride, I think, should be administered, intravenously if practicable; if not, intramuscularly, in five or ten grain doses of a three or four per cent solution within a few hours of the initial chill in order that it may attack and destroy as many plasmodia as possible while they are in the spore stage; since they become more resistant to quinine as they develop nearer the mature organism. The patient's general condition should be carefully watched as well as the temperature, and character, and quantity of the urine. If there is no apparent aggravating of symptoms attributable to the initial small dose of quinine, a larger dose, seven and one-half to ten grains should be given in six to twelve hours, repeated at least every twelve hours; giving one dose each day for four days at least, at the hour on which the chill occurred. I have not had a second chill in any attack in which this plan was followed, and only one case in which hæmoglobinuria was aggravated by the quinine and this was not serious. In this patient the urine was coffee-colored or darker in four to six hours following the dose of quinine and was practically clear in twelve to fifteen hours.

Supplementing the quinine treatment, I give calomel and soda of each grains one, every hour until five or ten grains are taken the first day, followed by one grain each day for four or six days if no evidence of salivation occurs. Arsenic in the form of Sodium Cacodylate (grains five) should be given intramuscularly every day for three or four days, then every second or third day until ten or twelve doses are taken, unless symptoms appear which contra-indicate arsenic —nephritis, puffiness under eyes, distress in chest, etc. Sodium Cacodylate may also be given intravenously, causing much less pain

to the patient. Arsenic given in this manner will surely benefit not a few cases which quinine either fails to benefit or has to be discontinued, and is a valuable adjunct to quinine.

I do not feel that we should lay down so valuable a weapon as quinine given as previously mentioned—until the more serious symptoms have subsided—not by mouth, however, unless we know it is contra-indicated. Methylene blue has proven of benefit in certain cases, but in most patients to whom I have given it, more than four grains a day often causes nausea and vomiting and bladder irritation, and this is probably too little to produce a noticeable improvement in Hemorrhagic Fever in any short period of time; in this severe type of cases you may be sure you are not going to have but few days until you either have improvement, or your patient in a majority of instances will be moribund. Warburg's Tincture, like Methylene blue, is frequently very nauseating and repulsive to these patients, therefore, I usually withold these remedies as I do quinine by mouth until patient is improved to the point that he can nourish well, and will not be nauseated by them. They are of undoubted value in convalescence to help get rid of the remnant of chronic malaria and may be taken intermittently for six or eight weeks following the acute attack with very satisfactory results. The liquid Warburgs is so objectionable to the taste that I frequently give the tablet with (one twentieth) to (one thirtieth) grain of arsenous acid three or four times a day after the discontinuance of Sodium Cacodylate.

Calcium Salts seem to exert a very beneficial influence in hemorrhagic fever. Vincent in 1905, made very extravagant claims for Calcium Chloride in which he stated that this drug given in four to six grams daily is a preventive of hæmoglobinuria, especially that caused from the ingestion of quinine; it prevents hemolysis, and also has remarkable curative power. Since I began its use five or six years ago I have been impressed that the patient's urine to whom I have given calcium lactate, which is the form I use, seems to clear up quicker; also the jaundice, and there is less tendency to hemolysis. Calcium also has some beneficial effect in supporting heart action and in increasing coagulability of blood.

There is a definite indication for alkalies in hemorrhagic fever especially as a preventive of acidosis, and there is less danger of serious nephritis and suppression, and probably less hepatitis if they are used. Sodium bicarbonate and potassium bitartrate are both very good. I prefer giving proctoclysis every six hours with sodium bicarbonate and sodium chloride, of each (drachms three), per quart of warm water, and one-half to one drachm of potassium bitartrate in one-half glass of water four times a day by mouth; the frequency of these drugs to be lessened as patient becomes alkalinized. Nausea and vomiting are also often prevented and controlled by the latter treatment unless caused by nauseating, oral medication, which I always strive to avoid.

The most important thing to be given by mouth to these desperately weakened, and rapidly impoverishing patients, is nourishment, and no

drug which cannot easily be given through a needle or a rectal tube, should be given at all, if it nauseates and prevents the taking and digesting of nourishment, which is so vital to sustaining vitality in this most critical moment. Not infrequently it is needful to give a saline transfusion to help overcome shock. I remember one patient that failed to rally from the shock of first chill and hemorrhage and really seemed moribund for first thirty hours, when I gave two hundred and fifty cubic centimeters of saline, intravenously, and improvement was almost immediate, and continued gradually until recovery was complete. My outfit was a cup, a 5 cc. leur syringe and needle and a catheter, and ice water boiled to make the solution.

Blood transfusion would likely save a large percentage of those who are lost because of the quantity of blood lost or hemolyzed. But this operation had best be done by one who is experienced in the work, and only after proper matching and grouping donor with the recipient.

Camphor in oil (three to five) grains hypodermatically may be given for rapid stimulation of heart whenever indicated, and may be often repeated. Adrenalin hydrochloride may also be given hypodermatically for the same purpose. Digitalis is very valuable in supporting the circulatory system, but is best given in the form which will give results administered through the hypodermic needle—digalen, digitalin, etc., as the drug frequently causes nausea and vomiting when administered by mouth in sufficiently large doses to produce desired results. Caffein-sodio-benzoate is usually very agreeable to the stomach and may be advantageously given in (three to five) grain doses either by mouth or hypodermatically. Pituitary extract is probably another quick stimulant of great value in hemorrhagic fever. It seems to aid materially in controlling hemorrhage from kidney, stimulates the heart and raises blood pressure. I have used it too little to form a definite idea of its value, but am enthusiastic about it and shall give it a test whenever I have another opportunity.

I usually give iron in the form of syrup of iodide (ten to twenty minims) in elixir lactated pepsin (two drachms in water three times a day). Irritating drugs such as turpentine should be condemned in the strongest terms and so should condiments and spices, and alcohol. The diet is essentially that of nephritis with the exception of frequency. It is best to nourish these patients every three hours in the day time and every four or five hours at night. Fresh whole milk should constitute the greater portion of the diet. Buttermilk, milk toast, egg and milk custard, buttered toast, oatmeal gruel, orange juice, etc. should be given. I like the yolk of a hard boiled egg, especially when the raw egg is not agreeable, as it contains a large per cent of organic iron. Of vegetables, spinach is perhaps most desirable for the same reason. Water should be used freely, both internally and externally. But I do not insist on large quantities of water by mouth, especially if the patient will take as much as a quart of milk per day. I believe the kidneys can be over-worked by too much fluid. An average of fifty ounces of total fluid every twenty-

four hours is ample, and if it has to be forced on the patient, even less; for proctoclysis is probably more beneficial to kidneys than large quantities of fluids by mouth.

Warm soap baths should be given once or twice a day to keep the skin in the best possible condition; and more frequent bathing it needed to reduce temperature. Coal tar derivatives should be avoided for this purpose. Patients should be kept as warm as they can comfortably be when the temperature is low, especially the extremities; and while the room should be well ventilated, no cool draft of wind should be permitted to blow across and chill the patient.

Other complications which are likely to need special attention, besides those referred to, are: (1) Hiccough, which, like nausea and vomiting, may require morphine and atropine hypodermatically. Both conditions will also frequently respond to gastric lavage and sometimes to mustard plaster over the epigastrium. (2) Extreme restlessness and sometimes (3) Headache will respond to five or ten grain doses of Chloretone as needed which is also helpful in relieving irritation of the stomach and in producing sleep. The ice cap is also valuable for headache. (4) Suppression of urine is usually a fatal complication, but may be benefited by the hot pack, cupping, and other counter-irritation over the kidneys; also frequent use of proctoclysis previously mentioned. Ether (one-half to one drachm) by mouth or hypodermatically every two hours may be tried as a last resort. (5) Constipation should be prevented by calomel, enemeta, or mineral oil.

After recovery from hemorrhagic fever let us not forget the danger of recurrence. Out of twenty-two cases, my series, two had two recurrences, and two had one recurrence each—nearly twenty-five per cent. Prophylaxis against recurrence of hemorrhagic fever is essentially that of malaria in general, except that inasmuch as hemorrhagic fever is in most instances due to chronic malaria of months and perhaps several years duration, and malaria that is very resistant to treatment, we should continue a systematic antimalarial treatment for several months after recovery from hemorrhagic fever. I prefer either an acid solution of (fifteen to twenty) grains per day in divided doses by mouth, on two successive days, omitting three days, or an equal amount of the hydrochloride in chocolate coated tablets. This is a modification of the Koch method. On the three days omitted by the quinine I prefer to give Donivans Solution and syrup of iodide of iron for several weeks or as long as seems indicated for anemia.

I feel that I should not close this paper without paying tribute to Laveran, the discoverer of the parasite of malaria, and Ross, the discoverer of the role of the mosquito, Bass for discovering how to grow the parasite; and others, too numerous to mention here, for their labors and efforts to save humanity from the awful suffering and the many deaths resulting from the various forms of malaria; and to remind my hearers, and those who may read this paper, of our grave duty, and greater opportunity in this broad field of preventive medicine.

Dr. Wood, Chairman: I am sorry that we shall be disappointed about Dr. Taylor's paper, which was to have been one of the most important in this whole session, "Methods of Procedure and Results Obtained in a Malaria Survey to Determine the Prevalence and Severity of Malaria in Lenoir County."

I think that now we had better go into the discussion of this subject, but before we start the discussion, I would like to mention that the highest privilege that this Society has had during the twenty years of my membership is to have with us such a distinguished member of the profession as we have today, Dr. Frank Billings, of Chicago, so I am going to take the opportunity of calling on him.

DISCUSSION

Dr. Frank Billings, Chicago: Mr. President and members: I feel very diffident about discussing these questions. I live in northern Illinois and ordinarily have but little opportunity to observe the effects of these diseases upon human beings. Nevertheless I have had some experience due to unusual conditions which resulted in what I may call epidemics of malaria in Chicago.

In 1891-2 the construction of the World's Fair buildings on low lying swampy ground was under way. The site was a breeding place for all species of the mosquito. Among the other workers employed were many Italian laborers, many of whom were malaria carriers. These carriers infected the anophyles mosquito breeding in the vicinity with the result that malaria occurred in the population of the southern part of Chicago. I saw many of these patients and demonstrated malarial parasites in the blood. I saw two patients with hematuria. I had read much of malarial hematuria and of the divergent opinions concerning the effect of quinine in the treatment. Both of these patients recovered with the use of quinine in maximum doses given by mouth.

In 1898-9 we again had a good deal of malaria in Chicago which was due to malaria carriers in the person of our soldiers who returned from Cuba and Florida.

In 1902 and the next few years the drainage canal which connects the Chicago with the Illinois River was constructed. The canal extends through some regions which are low lying and mosquito infested. Here Italian laborers, many of whom were malaria carriers, were employed, and for three or four years clinical malaria existed in the west side of Chicago. This gave us plenty of clinical material to teach our students concerning malaria. Of course, I have had but little experience in malaria as compared with the splendid opportunities which you have enjoyed in that sort of practice.

In the prevention of malaria you are, of course acquainted with the splendid work of Dr. Bass of Tulane University Medical School at New Orleans. Funds were furnished and under the direction and personal supervision of Dr. Bass, two parishes in Louisiana were investigated. A census of the population was made and the blood of every individual was examined so that Dr. Bass finally knew definitely the incidence of malaria in the population.

He experimented and found that 15 grains of quinine per day was sufficient after a period of about four or five weeks to entirely sterilize the patient. Then by the prevention of the migration of malaria carriers into these parishes, they remained malaria free. Dr. Bass stated that the people of the parishes co-operated splendidly in this work and that their final recognition of the benefits of health made them very jealous of the importation or the existence of malaria in their midst, and that they had evidenced this by compelling individuals with known malarial infection to take treatment.

This method of the elimination of malaria from a given territory is practical provided the financial means are available.

Disease prevention has been and always will be a part of the work of the practicing physician. It is a fact that by the application of methods of disease prevention, the physician will interfere with his own professional activities and possibly with his financial income. Nevertheless, every conscientious and honest physician will do this. In spite of the application of the available and proved methods of disease prevention, we will never reach the time when as practicing physicians we will have nothing to do.

I am delighted to be at this meeting and to take part in your deliberations. For twenty-two years I was a general practitioner. That part of my professional life I enjoyed above everything else. The Surgeon General of the army honored me by a commission and active service. I was away from Chicago during the war for approximately two years. Upon my return I had reached the age of retirement from the faculty of the college and the staff of the hospital and although I was invited to continue, I preferred to retire from active work and to permit younger men to enjoy the promotion which they had earned.

The University of Chicago has appointed me to organize the new medical schools which are now under way. As a trustee of the American Medical Association I am honored by invitations from various States to attend and speak at the annual meeting of State societies and this I enjoy.

Dr. I. W. Faison, Charlotte: Mr. Chairman: I haven't anything specially new to talk about, but I have been practicing medicine a long time in North Carolina. At one time, I think it was at Tarboro, nearly forty years ago, this very subject was discussed, and it was taken before the leading men of that time. There were Macon and Pittman, Duffy and Hines, Jones, McDonald, of Washington, and four-fifths of them in this very discussion took the ground that it was not malaria and that quinine was not indicated.

I was a young man then, and I had been taught by one of the very greatest men that the medical profession had ever produced, Dr. Austin Flint, and he taught then that quinine was the remedy. I lived in Wayne County and I treated all my patients with quinine, and they all got well. They then stood out and held for Acetate of Potash as the remedy at that day and time. And I agree entirely with everything that has been said and done, but I have been per-

suaded that calomel plays a small part, dealing with the liver, and if I had a case tomorrow I would not give it a grain of calomel, I am so thoroughly persuaded that it does not act on the liver. After the efforts that have been made at Harvard Medical School in Boston, they have decided that it will not, and as I said, I don't give it, and wouldn't give it if I had a case tomorrow. I have been persuaded that podophyllin is a better and a safer remedy.

I agree about that needle treatment. I am opposed to the needle treatment in most cases.

Dr. B. L. Long, Hamilton: I would like to ask if you have ever had any experience with hæmoglobinuric fever in the negro. It was once thought that the negro is immune to this disease, but I have seen two cases in negroes, one of them fatal.

Dr. Thompson: I don't recall that I ever had a case of hemorrhagic fever in a negro, except in a mulatto. You see, a negro is largely immune to malaria, and it does not treat a negro as badly as it does a white man when he has it. Neither does syphilis in my experience.

Dr. Ben Hackney, Lucama: I have been well impressed with this discussion on hemorrhagic fever, and I want to say a few words in regard to something that has recently been stamped on my mind. A few months ago I had the pleasure of giving malaria a great deal of attention, under Dr. Bass, of New Orleans, and in that study I was firmly impressed that in the treatment of malaria there is only one remedy, and that is quinine, and I was more firmly impressed that there was only one way of administering that drug, and that was by mouth, and the drug of preference under his study was the sulphate of quinine. In a hundred cases we found that hemoglobin increased and the blood count increased exactly in the same proportion as it did where we used quinine, arsenic and cacodylate of soda. In a hundred cases that I looked at under Dr. Merango, of Mexico City, the same thing held true, and the same practice was being carried out in Mexico City, that the use of quinine by mouth was the only method of administration.

On going farther south, to Costa Rica, I was again impressed with the fact that quinine sulphate alone was the treatment for malaria. They administered it there by mouth when they could, and when they could not they preferred rectal administration, but they laughed at the idea of giving quinine in the muscular or subcutaneous tissue.

I went down as far as the Panamanian Republic and visited the hospital at Panama City and asked for some cases of malaria there, and they almost laughed at me for asking for cases of malaria, because, they informed me, it had been wiped out there years ago. So I found that malaria is a preventable disease. Among about six hundred patients that had been admitted to Ancon Hospital in six weeks, none of them had been diagnosed as malaria. In this hospital I talked with

the physicians in regard to the same old question that I had asked all along the line, the treatment of malaria, and they used there the sulphate of quinine only, administered orally.

At the hospital at Colon, in Central America, I found some cases of malaria, and one of the physicians there informed me that he could not remember seeing a case within the past four or five years that developed within his own territory. Typhoid fever, also, has become almost unknown to them.

I thought it might be worth while to mention that whether we use quinine with or without other drugs in the treatment of malaria, it is the quinine alone that does the work. And whether we see fit to do it now, or to think over it for the future, for our eastern part of North Carolina, it is a preventable disease.

Take those two hospitals that I just mentioned in the Republic of Panama, malaria is almost unknown. The natives of that territory can live and enjoy perfect health there in the tropics without thinking of having malaria, and if they can do things of that kind there under such surroundings, with everything enticing for the development of the mosquito, why can't we do something of the kind for our own State?

Dr. L. B. Evans, Windsor: I live in the northeastern portion of North Carolina, that part that the people in the central part of the State call the Lost Province, where we have the mosquito and malaria, and where we still believe in calomel and the Bible.

In regard to calomel I have noticed this, that when a physician leaves eastern North Carolina and goes anywhere else where he does not find malaria, he immediately becomes opposed to the use of calomel. When a physician from any other part of the country comes to Eastern Carolina, he goes to using calomel, and I fully believe that if my good friend, Dr. Faison, would go back East, he would go to using calomel again.

As to the amount to use, I think that my friend, Dr. Thompson, has got it down about right. One physician in my town who has been very successful in the treatment of hemorrhagic fever believes in very large doses of calomel. I have known him to give a very delicate woman with a severe yellow chill as much as a hundred grains of calomel as an initial dose, followed with twenty grain doses every two hours for four more doses, making one hundred and eighty grains within twenty-four hours, followed by recovery. It would be hard to make that man believe that calomel is not a most essential drug.

Just a word in regard to the prophylactic treatment that I haven't heard brought out here. The day is coming when every case of malaria fever will be screened. We shall not have reached proficiency in the treatment of malaria until we learn the necessity of screening a case of malaria just as we do a case of yellow fever.

I want to ask a question. We are taught that malaria comes through the anopheles mosquito and from that alone. Suppose we could go into a region walled off from the rest of the world with no malaria,

but with plenty of the anopheles mosquitoes, would those people be inoculated with the malaria germ? Your answer is no. As I understand it, malaria is carried from one patient to another by the mosquito, just as a plowman goes into a field and plows where there is nut grass, and with a little piece of this nut grass sticking to his plow, he goes into another field where there is no nut grass and uses this plow which has not been cleaned off. Pretty soon nut grass grows up in that field. To me it is just as simple as that. If we can cause to be immune every person in every district for a period long enough for every infected mosquito in that district to be dead, there is no danger, unless it is brought back from another district, and I want to urge upon you the necessity of screening your patients.

Dr. Thompson, closing the discussion: Mr. Chairman, I hardly think it is necessary for me to say anything further. I will say that the question of the effect of calomel on the bile-flow is to be determined by each man in his own experience with it. I don't know whether calomel promotes the bile-flow or not, but I do know that it somehow lifts the burden off your liver; and we have got to take into consideration the seeming fact that a thing may be proved to be of no value in a laboratory way, and yet be very valuable if put into practical use in a human being. The one man of any prominence who expresses this view of things is Dr. Hare, of Jefferson. And what I have observed in my own practice, that I am willing to cling to.

Faison's a good fellow, but he is seeing gods with crossed eyes. He lives in the hills and I in the lowlands. Now, I am very glad that this matter of the consideration of malaria has been brought up. I think the Society owes Dr. Wood a debt of gratitude on that score. It is the one destructive thing that we have in Eastern North Carolina and the coastal region of the lower United States. If we could get rid of malaria we would blossom like a rose-garden. But we haven't the energy to get rid of it, if it were possible to get rid of it. They had it in Illinois and Indiana, but somehow they had more energy and got rid of it, when God Almighty has been immensely more generous and kind to us than to them.

I hope next year we shall continue this discussion. We can do it without any reflection on ourselves. We did effectively on the hookworm question, although we got very angry, some of us, because Dr. Stiles came down here and said we were wormy.

Dr. Bryan, closing the discussion: I wish to thank the gentlemen for their remarks concerning my paper and as a rebuttal to Dr. Faison's criticism, I can state that after administering hundreds of doses I'm quite sure that not one of these patients hates me for using the remedy this way; and I am confident that a large per cent of them are the most grateful patients I have; and some of them request me to give them this intravenous treatment when I think it unnecessary and refuse to give it. In replying to my friend and neighbor, Dr. Cy. of Onslow, I can say that not more than 5% of veins used have shown Phlebitis to an extent of real inconvenience or pain and nearly all

of these occurred when I was using stronger solutions of quinine than I have recently been using, and, too, my technique was more faulty in the earlier cases. In the cases in which one vein became injured or closed up I have used another vein on the same arm and no real damage resulted to the arm. None of the worst cases had more than a week or two of soreness, with symptoms of only a mild Phlebitis, which in every case under my care did not limit the use of the arm for more than ten days. Pardon personal reference, but I have had my nurse give me a number of these doses intravenously, while I was suffering some of the severe symptoms of malaria which would not respond promptly to any other treatment, and I'm sure each 7½-gr. dose intravenously has given me more relief than any two days treatment I have ever taken by mouth. I have a very chronic and resistant type of malaria, which small doses of quinine by mouth do not benefit to a noticeable degree. I wish to mention again with special emphasis the strength of the solution and the technique of administration. I have recently used a dilution of 1 gr. quinine dihydrochloride for each two c.c. of solution, this is put up by Lilly in 20 c.c. anpules. Warm this and give it very slowly, only about 1 or 2 grs. per minute, not having injured the vein too much while introducing needle (the ordinary 24 guage hypo. needle is sufficient); and, of course, absolute antisepsis and asepsis must be observed. Have the patient in recumbent position, in which he should remain for one-half hour after giving the dose, even if not too sick to be up. In this way I have had no sore arms and only satisfactory results.

PRACTICE OF MEDICINE AND PEDIATRICS

H. H. Harrison M. D., Asheville, Chairman
Pediatrics
W. A. Bradsher, M. D., Roxboro, Chairman
Practice of Medicine

SOME OBLIGATIONS OF THE GENERAL PRACTITIONER

W. A. Bradsher, M. D., Roxboro

Chairman's Address

I have been led to think along the lines of my paper both on account of my experience in general practice and on account of my work as the medical member of a local board. I have been made to feel that the welfare and physical progress of the masses demand the help of every enlightened force. One of these forces, it appears to me, especially, is the general practitioner. It is he who is everywhere constantly facing the hidden enemies of humanity. It is he who mixes with humanity in all of its phases—rejoices with it in a new life, walks with it through its existence, and sees to it that it passes out not without sufficient cause.

On account of this association he has peculiar and varied obligations.

I shall not discuss in any detail his obligation to keep thoroughly abreast with the scientific side of medical progress. Rather, I shall dwell just briefly on some features of his obligations which have been in my mind since my local board experience.

That feature to which I want especially to refer concerns the prevention of improper development—concerns the establishment of those general conditions of living which will bring about a normal manhood.

In my general practice I had had first-hand knowledge of the conditions in which our people are living. In my local board work I had an opportunity to see what results these conditions developed. I here studied in cross section, so to speak, our manhood in its prime—at its physical best. The amount of acute disease did not so much impress me. What did impress me, however, was the great number of men who showed no evidence of disease, but were just all-around below par—the product of conditions back home.

I saw any number of these young men on the borderline between acceptance and rejection go to the camps and return almost unrecognizable on account of their improved physical development. This was brought about by the better living conditions which camp life carried with it—regular habits, proper food, sufficient sleep and a pepful attitude toward life. Their collective lives were guided by superior intelligence and we saw the results. When a short space of camp life demonstrates to us such an outcome, why should we not be impressed with the enormous possibilities if like conditions could be thrown around our children for them to grow up in and develop in?

As I examined these young men and found their physical condition so far below par, I wondered how much of the responsibility came back to the medical man. Have we given all of our time and efforts

to the treatment of acute diseases—things temporary, and, in a way, not so vital—and taken too little interest in those things which are not urgent at the time but which are eternally essential in the proper growth and development of men? We have done our part in ministering to the sick. Have we used our opportunities to prevent, have we scattered that necessary information abroad which will enable people to grow into the image of the great ideal? Have we put ourselves on a plane where we could be understood and appreciated and followed?

Is there too much difference between what we really are and what the masses think us to be? They attribute to us powers which we do not have, but which our dignity and our pride make us passively accept. Ours is one viewpoint, theirs another. Some few think they have rung our number and have gone off to Christian Science, the chiropractor, or the like. Now, if we are to do our greatest good toward humanity, we must destroy the difference between these two viewpoints. We must do away with medical superstition. One of the definitions of the word "practitioner" is "One who practices sly or dangerous arts." I have wondered if the very title we bear does not, from the viewpoint of the superstitious, go back to the days of the hoodoo and witch.

We must take off the mask and let the masses know that there are no supernatural powers associated with medicine—that it is all a matter of common sense and knowledge applied to everyday life. We must not let the popular idea of medicine remain the outgrowth of superstition. Superstition is the child of ignorance. We have all along in our work compromised with ignorance rather than persist and have the right prevail. We have chosen, rather, in too many instances, to follow the line of least resistance, and the line of least resistance though at times convenient and profitable to us, will certainly not take care of the masses.

We must let a new day dawn when there will be no mysticism and no cunning, and everybody will know that medical processes are governed by practical, scientific knowledge, and are effective only in proportion as they harmonize with such knowledge. The true doctor is one who lines up with nature and teaches his people to interpret and follow nature's laws.

In leading our people to see things from a commonsense viewpoint, we must see to it that no influence hangs about to distort their knowledge. I say it with shame, but with faith in its truthfulness, that the average household in North Carolina owes its so-called medical knowledge to the reading of patent medicine advertisements. The proprietors have been keen in their propaganda, and we have not matched them.

They are using some of our most influential organs for the accomplishment of their ends. One of the most astounding inconsistencies that I know of is the fact that our so-called religious papers—papers that stand for the highest in life—fill their columns with patent medicine advertisements. Many of the saints confine their reading to their

religious paper and accept it from cover to cover as law and gospel, swallowing patent medicine dope as readily as the scriptural lessons.

This past year I took one of the leading papers of this State belonging to this class and cut twelve patent medicine advertisements from its pages. I sent these to the advertising manager of one of our State lay papers with the request that he let me know on what terms these advertisements would be acceptable to his paper. He replied in detail that none of these could be tolerated. That is to say, our religious papers are carrying advertisements so stocked up with fraud—vital fraud, if you please—that a decent, self-respecting lay paper will not countenance them. Between their purported higher mission and their real, actual function is a polar distance. It is up to somebody to let them see the error of their way, to let them see how much better they can serve the ethical and moral side of life, how much more happiness they can scatter among their people, if this space were given to things concerning healthful living. Good health is the best basis for right morals.

In a similar way we must get hold of other influences that are being wrongfully used and see to it that they are turned to the best interests of humanity.

We must not only put down things that retard people in getting the right viewpoint of life, but we must encourage and co-operate with all the influences that will help them to do it.

I can not better sum up our obligations than to say that we should give more serious consideration and more active encouragement to the policies of the State Board of Health. In its relation to the general practitioner, the State Board of Health stands, so it appears to me, as a kind of court of equity. In law, equity is the correction of that wherein the law, by reason of its universality, is deficient. As I see it, the State Board of Health is correcting our deficiencies. It is doing that which we do not see to do, or do not care to do, or do not have time to do. It is not blasting the way for State medicine, which is a dream and only possible in proportion as we prove incompetent to the task ahead of us. The State Board of Health is doing work which in years to come the whole profession will take the greatest pride in, and doing some of it, I regret to say, handicapped by antagonism.

Intelligent, sympathetic criticism of its policies is not to be decried, but there should be no antagonism. So far as I am concerned, one of the most hopeful features of the medical profession in North Carolina is what the State Board of Health is doing. It is leading our people away from superstition—it is "feeding the hungry flock." It is not only trying to eradicate our physical difficulties, but it is trying to establish such knowledge and such conditions that these difficulties will not be a problem for the coming generation. Its forward work is being felt not only here in our State, but all over the country—and then some. When I go back a few years and see no birth records, no death records, no venereal records, no bureau of infant hygiene, no concerted good health propaganda, etc., and compare it with what is being done today, it makes me feel that we have

been transferred from semi-barbarism to an enlightened civilization; it makes me want to apologize for not putting my shoulder to the wheel with more vigor and raising my voice in more amens.

DISCUSSION

Dr. Harrison, Chairman: Dr. Bradsher has certainly brought out some points that we ought to think about and ought to talk about. I am sure, however, that all of us more or less agree with him, so perhaps there may not be so much to discuss, after all.

WHY THE PEDIATRIST?

Chairman's Address
H. H. Harrison, M. D., Asheville

Of the answers that might be made to this question I shall use but three: because the present mortality rate for children demands him: because the times demand him: because the present size of the medical science demands this subdivision. It seems that the mother of invention has discovered a large field in general medicine relatively rarified, where more thought and time and study are needed.

From the draft findings of the late war, namely over one-third of our young men unfit, it behooves us to get at the foundation of the condition, to begin at the source, not that we are looking to future wars but simply and always for better things, for the children of today will soon be parents themselves, better parents physically and mentally, and better parents also because they will appreciate the value of good child hygiene. If our work be along right lines we will be "twice blessed."

But worse than the figures of the draft examiners, and worse than the figures of actual warfare are the figures brought out by the vital statistics law, yes, right here in our own State. These figures on infancy point the way to the nation for the *greatest conservation* of the race, for in North Carolina *one-third of all deaths are children under two years of age*. And again, *12%* of the babies that are born die *before* the completion of the *first twelve months* of life. Do not these figures *cry out at us medical men*—so-called doctors—to rise up and amend our ways? I could give other figures, but do not *these alone amply justify* the speciality—for what other branch of medicine, what other *three branches* can show such a disgraceful condition—or such a *harvest field* to work in? Why is this appalling figure? It is at least partially because most of us have been taught, and have continued to believe, that medicine in the child is the same as medicine in the adult, *which is a fallacy*, for there is a fundamental difference—a difference in the manifestation of disease, a difference in the reaction to disease and hence a difference in the diagnosis and in treatment. They are different animals, different species. Their physiology is different, their pathology is different, and yet in our medical schools today this difference is not brought out amply to the

student. He is led to believe if he knows syphilis in the adult he knows it in the child, and the same is true of tuberculosis, and nephritis, and dysentery, and how many more need I mention? Many of the symptoms are the same, and there will invariably be others that are *peculiar,* and these often lead one *far afield.* Take the proposition that is often up to us—keep this child going for another twenty-four hours—or to guide him eventually back to health—are very, very different propositions in the young from those of the adult suffering from a malady that goes by the same name—as at least *some* of you here will bear me out in.

But is their physiology actually different? In many respects very different, for example the normal ration of fat for a six months infant weighing fifteen pounds at the breast is approximately half that of a healthy adult doing moderate work, but who weighs ten times as much. Again, if the adult took as much fluid in proportion to his weight he would have to take about twelve quarts daily. And this is not a mere incident for departure from these proportions in the young leads to serious results. Their metabolism is different, their oxygen consumption is very different; their food reserve is infinitely less; their growth propensity is marvelous; actually growing at times while losing in weight; certain organs or glands are active in the child that are wanting in the adult, and vice-versa.

That their pathology is different is more readily accepted. They have many diseases that the adult knows nothing about, and the adult has many that the young experiences but rarely.

And again from another angle as the science of medicine grows broader, and deeper, and finer, is it not a mistake to attempt to master it all, is it not more satisfactory to the physician as well as the patient to narrow your efforts, to increase your knowledge, your skill, your self-confidence, which is so essential to inspire confidence. Dr. Wm. Mayo was right when he said: "So tremendous has been the recent advance of medicine that no one man can understand more than a small fraction of it." What does the internist know about handling the nervous child? And yet neuroses today are said to cause far more suffering in the human race than any other disease. Is the general man alert to the dietetic peculiarities that develop so often in childhood, and their very serious effect? Does the good general man know the normal weekly gain of a ten months infant, if not, what is he to do when he finds it four ounces, if he has been thoughtful enough to ask? Does he know the importance of height-weight-age ratio? Is he familiar with the casein curd or a fat curd in the stool and know their indications? Is he familiar with the differences in the quality of the nutritional elements in human and cows' milk and know how to use this knowledge? Does he know how to figure calories from a given formula, and their approximate requirements for a child of given age and weight? Is he interested in what are the proper foods for a child of two years and how they should be prepared, to say nothing of infant feeding, a thorough knowledge of which alone would save thousands? Is he versed in spamophilia and its management?

Does he know of the very high incidence of intracranial hemorrhage in the new-born and the very efficient treatment that is used for this condition—points that have been brought out by a man born and residing in this State? Is he conversant with the protean manifestations of congenital lues and with its management? Does he know the normal position of the apex beat of a given age? Can he diagnose otitis media definitely with a speculum and give it proper care? Is he familiar with the rarer diseases peculiar to the very young as prematurity, hemorrhagic disease, or with hydrocephalus, or rickets? Can he do intubation and extubation—this is rarely needful except in children? Is he familiar with the use of the Pirquet and Schick tests and know their significance? Is he familiar with the early signs of mental arrest and prepared to give these children early help?

Pediatrics is not a new specialty and why it is so slow seeping into our smaller cities and towns I do not know, for as I have said "the harvest indeed is plentiful, but the laborers are few." Good men doing good internal medicine are not good pediatrists—this delusion has been operative long enough, and he who is not willing to accept this is making grave mistakes—mistakes that are showing up badly for North Carolina's vital statistics. Are we to lapse back into our indifference and ignorance of pre-war days, "like dumb driven cattle," or shall we "be heroes in the strife?"

The school physician is a boon to the cause and so is woman suffrage and the infants and childrens clinics of cities, and the teaching of mothercraft in our schools for women. But in every community of any size there should be one man at least who devotes his efforts and reading to infancy and childhood. He should not only be naturally fond of children, but should be temperamentally fitted to deal with them, with spoiled children and their more difficult spoiling mothers. He should have the gift of winning the child's confidence and affection, for the sick child has no natural propensity for strangers.

He should possess an insight into child psychology. He should have a knack of showing those women who make poor mothers the error of their ways. And he should be interested in preventive medicine for good pediatrics is largely in the realms of this science.

The very gratifying figures from the welfare and well-babies clinics of our large cities have shown that we need not look to prenatal care to cure all our troubles. It can do much, but good post-natal care and good pediatrics, can do wonders with our mortality figures in early life.

And in conclusion let me cite a case a little past infancy where the pediatrist might be useful. An intelligent mother had a child of three and one-half years that was not growing as it should, was a little white, ate fairly well, tired easily, slept poorly, "was easily provoked and thinketh much evil," had flat-foot, carious teeth and bad posture. She took the child to her physician who looked him over carefully and while he admitted that he looked badly still his temperature was normal, his heart and lungs were alright, his abdomen showed no gross lesion. So he gives him calomel and santonin and a tonic.

A couple of months passed and the little fellow gets no better. The father who at first thought little of it, has gotten slightly interested, but in his heart feels that it is nothing of consequence and that time will straighten him out—until one day the child has a convulsion out of a clear sky, and this will arouse parents when nothing else will, harmless though they usually be. The father now takes the boy to the city and consults the best diagnostician in the place, who is an excellent man. His verdict is there is nothing particularly wrong, that he has an inherited nervous temperament and is undernourished, and advises that he eat so much milk and eggs, goes to bed early at night, to see that the bowels move regularly, and has him return in a month, when he finds no improvement, so advises tonsillectomy, which leaves the child in a much worse condition, and fails utterly to make a diagnosis. And the parents conclude that doctors are humbugs.

Dr. Harrison, Chairman: The next man on our program is Dr. Louis Webb Hill, of Boston. I am sure that we all appreciate his having come such a long distance to be with us, and I am also sure that he will give us something good.

Dr. Hill needs no introduction to any gathering of medical men, particularly in North Carolina. His name appears frequently in medical journals and text books and, more than that, Dr. Hill was with us in North Carolina about 1916, giving lectures and clinics on pediatrics, under the auspices of the State Board of Health, and I am sure that all those who heard him then will remember him. His paper is entitled: "Chronic Intestinal Indigestion During the Second and Third Years."

Dr. Hill: I have taken a subject about which not much is written in the textbooks. There are a few German and English articles concerning indigestion after the first and second years, but in our American textbooks it has been neglected. As you follow me along I am sure that you will realize that these cases of which I am speaking are very common.

CHRONIC INTESTINAL INDIGESTION DURING THE SECOND AND THIRD YEARS OF CHILDHOOD

Lewis Webb Hill, M. D., Boston

It is not generally realized that children during the second and third years need as careful dietary supervision as they do when they are on an exclusive milk diet, and many mothers who would not think of attempting to feed a small infant without medical advice, and who would take the utmost pains with milk modification, let the child eat practically anything he wants after he has begun to take solid food. It is this carelessness that is responsible for not a few of the cases of chronic intestinal indigestion which we all see so frequently: other

cases follow an acute attack of fermentative or infectious diarrhea, which can likewise be largely prevented by proper feeding. Let us consider briefly the feeding of normal infants during the last quarter of the first and the whole of the second year.

My personal feeling is that the present tendency is to feed too varied a diet at too early an age, and I do not believe in the practice, so commonly employed by many pediatrists today, of feeding large amounts of green vegetables, potato, and eggs to infants even before they have reached the end of the first year. To my mind this practice is unsound, and although in many cases it does no harm, in others it causes severe digestive disturbances, which may take months to repair. There are many sound arguments in favor of a more simple diet, which need not be mentioned, as we are discussing especially indigestion, but will merely state what I consider a reasonable diet.

My personal practice is to begin semi-solid food, such as oatmeal, farina, or zwiebach soaked in milk, at the eighth or ninth month. At this time chicken or lamb broth with rice may also be added, and a small amount of apple sauce or prune sauce if the baby is constipated. There is no good reason whatever for attempting to feed anything but milk mixtures before this time.

At the end of the first year the baby should be taking daily about a quart of whole milk, some starchy food such as cereal, zwiebach, rice or dry bread twice a day, a little soup or possibly beef juice, orange juice, apple sauce or prune sauce. In my opinion this is a quite sufficient diet, and it has been my experience that the normal baby does well on it. At about the fourteenth or fifteenth month strained vegetables such as spinach, carrots, or tender string beans may be added, and potato may also be added at about this time.

Potato starch is for some reason more likely to cause digestive disturbance than almost any other kind of starch, and although we have all seen babies of a year old or even younger, thrive while taking large amounts of it, in general it is best withheld until the fourteenth or fifteenth month. Potato and green vegetables should not be given on the same day at this time; it is usually best to give potato one day, a green vegetable and rice the next day. It is well not to give too much of the same sort of starch on the same day: if oatmeal is taken for breakfast it is best to use macaroni, zwiebach or bread and butter for supper.

Soft boiled or coddled eggs may be begun at sixteen months, a couple of spoonsful at a time, and gradually increased until a whole egg is taken every day. Eggs do not agree with all babies, and if such is found to be the case in any individual instance, it is best to omit them temporarily from the diet, and to start them again in another month or two. Some babies who cannot take the whole egg can take the yolk, hard boiled and grated in with the vegetable or potato. Meat is usually begun at about two years, the best meats to use being chicken, lamb chop, or crisp bacon. It is not common for meat to cause digestive disturbance, and I have a suspicion that it might probably be begun earlier in small amounts, without doing any

harm. No raw fruit should be given to children under four or five years of age; in this part of the country all milk fed to babies and small children should be boiled or pasteurized at all times of the year, and it should not be Jersey or Guernsey milk. The child should not be fed between meals, and he should be made to eat every new article of food as it is offered, unless it actually seems to disagree with him.

It is just as easy to feed children correctly as incorrectly, and it will be found that the vast majority of children do well on the general plan outlined above.

So much for a brief resume of the principles of feeding a normal child: let us now consider chronic intestinal indigestion.

For practical purposes this may be divided into two groups: the mild cases, and the severe ones. In the mild cases there is a certain amount of indigestion, due almost always to over-feeding with fat or starch, but there is no far-reaching general nutritional damage, and the indigestion is not in most cases hard to correct. In the severe cases there is present a marked and long standing indigestion, which has continued so long that severe damage to nutrition has been brought about, which may take years to correct.

THE MILD CASES

A child of two or three years is brought to us because of failure to gain, poor color, occasional undigested stools, and probably a certain amount of abdominal discomfort. Upon examination we find a child who is somewhat underweight, who is pale, whose flesh is rather flabby, and whose abdomen is likely to be somewhat enlarged. There is nothing else found upon physical examination. Careful observation of the bowel movements is here of the utmost importance, for by knowledge gained from this source together with a consideration of what the child is eating, it is not difficult to find out what element or elements of the diet he is not digesting. The trouble is usually due to over-feeding with either starch or fat, and the stools vary according to which element is at fault. In the starch cases they are likely to be rather large and mushy, of a brown color, and with a peculiar half sour, half foul smell, which somewhat resembles that of a pigpen. If fat is at fault they are likely to be rather light colored and not so large or so mushy as in the first case. Microscopic examination is of considerable importance, and without it, in this type of case, one is working in the dark. One may find a large excess of either fat or starch in the movement and make one's diagnosis accordingly. Anything more than the very smallest amount of undigested starch is abnormal, but it must be remembered that there is normally not an inconsiderable amount of fat present. It is not possible to treat these cases successfully, unless one knows which food element is at fault: this knowledge is obtained by a study of the diet of the child and by examination of his bowel movements.

The treatment of the mild cases is not difficult, and is most satisfactory. It consists simply in considerably reducing the amount of the offending element in the diet. In the mild fat cases it is usually

enough to instruct the mother to pour off all the cream from the top of the child's milk, and to omit also butter and bacon. In the starch cases a reduction in the total amount of starch taken in, and a limitation to the more easily digestible forms is all that is required. Potato should always be withdrawn, and the green vegetables should be considerably restricted. Rice jelly, crisp toast or zwiebach are probably as easily digestible as any form of starch. Rice can be given in the morning, and possibly again at noon, the zwiebach at night. The rest of the diet would consist of milk, eggs, meat: essentially then, the diet of a normal child with the starch somewhat restricted both as to quality and quantity. Under this regime the abdominal distress should soon disappear, the stools should improve and the child should begin to gain weight.

Following is what I should call a typical case of starch indigestion of rather mild degree.

REPORT OF CASE

H. S. Was first seen at fourteen months on account of failure to gain, and undigested bowel movements. She had been breast fed up to eleven months, and was then put on whole milk, cereal, broth, baked apple, and baked potato. She takes one small potato every day, and likes it the best of anything in her diet. She weighed 21 pounds, 8 ounces at one year, and has not gained since. Her stools are always rather large, and somewhat loose: today she has had three, foul, mushy ones. Physical examination showed nothing remarkable except a somewhat distended abdomen, and a rather flabby condition of the flesh. The stool was large, mushy, and rather foul. It was brownish green in color, and contained a good many small masses which looked like pieces of undigested potato. Microscopically it showed innumerable granules of undigested potato starch. This child was put on the following diet:

Breakfast: Milk 8 ounces plus oatmeal or farina.

Lunch: Milk, 8 ounces.

Dinner: Soup with rice, and one or two tablespoonfuls of well strained carrot, or spinach, junket, milk.

Supper: Macaroni or zwiebach and milk.

In a very few days her stools had improved, and about this time the grated yolk of a hard boiled egg was added to her diet. She did very well right along, was kept on this diet for about three months, and potato was not added to her diet again for another three months. She is now about four years old, and handles potato and all other starches without difficulty.

The very severe cases are different. This condition which we call severe chronic intestinal indigestion, is called by the English, the "Cœliac" or the "Mucous" Disease, and the late Christian Herter of New York, who was much interested in it, called it "Intestinal Infantilism."

It is in reality a late stage of the condition of mild indigestion that we have already described, where the process is of such duration and severity that severe nutritional damage has resulted. It usually begins during the second year, but may be seen in children somewhat older.

It is very likely to follow an acute attack of diarrhea, or may come on more insidiously. The chief thing about it is the extreme impairment of nutrition. The abdomen is very large, so much so that the disease is not infrequently mistaken for tuberculous peritonitis. The face is sharp and haggard, the skin loose and inelastic without any subcutaneous fat, the extremities frail and weak, often so much so that the child cannot walk. The stools, which form a very important part of the picture, vary at different times. They may be large and formed, rather light in color: this type of stool contains a large amount of fat, and is likely to be seen when the diet contains a considerable amount of this element, as would be the case if the child were taking whole milk.

At other times the stools may be very mushy, unformed, and may show large amounts of undigested starch and cellulose, both macroscopically and microscopically. This type of stool is seen if the child has a considerable incapacity for starch, and if much starch is fed. There will also usually be occasional periods of diarrhea, when the stools are very loose and watery. During these periods they will usually contain large amounts of mucus, sometimes more mucus than actual fecal substance. The stools always smell very badly, no matter what sort of diet is taken. If starch and sugar are being fermented they will usually smell sour, and will react acid to litmus paper: if a considerable amount of protein is taken, they are likely to be very foul, and alkaline. Vomiting is not ordinarily present, but may be in some cases, and is a most troublesome symptom. The child is very much stunted in growth, both as regards height and weight, and a child of three years may weigh as little as 18 or 20 pounds. The mentality is however, unimpaired. These children are almost always alert mentally, but are likely to be of a rather peevish disposition. Rickets is occasionally associated with the condition, but not frequently enough to be of any significance. What is the cause of the condition, and what conception shall we take of it in order to formulate a basis of treatment? There is no evidence to show that it is primarily an organic disorder of one of the large digestive glands, such as the pancreas or liver: there is no evidence to show that the essential etiological factor is a primary inefficiency of any of the digestive ferments, and all students of it have tried the administration of various of these ferments without success. At autopsy there are no especially noteworthy or characteristic lesions found except a rather thickened and irritated intestinal mucosa. Probably the best conception to take of this condition is that it is brought about by a chronic infection of the intestinal contents (note I do not say intestinal wall) with organisms which should not be there, and that the small intestine, which should normally be relatively free from bacteria, is flooded with an alien bacterial population, which hinders the normal processes of digestion that should go on there: this bacterial population lives upon the food within the digestive tract, and the irritating products resulting from bacterial decomposition of the food set up a chronic inflammatory condition of the intestinal mucosa, which in its turn probably hinders digestion and absorption. The late Christian

Herter, who was a close student of all intestinal disorders, believed that the bacillus bifidus, which is so commonly and normally found in the stools of breast fed infants, and an organism which he called bacillus infantilis, were the two most common offenders. For us the name of the organism or organisms which are present is not of especial significance, as long as we understand that they are almost always organisms which seem to thrive upon starch, and which do not readily attack protein. It is not certain whether the fat intolerance practically always found in these cases is caused by direct bacterial fermentation of fat or is secondary to the original carbohydrate decomposition.

This then is our working conception of chronic intestinal indigestion, and is probably not far from the truth. In a word, therapy consists in so reducing or entirely removing from the diet the food or foods upon which the especial group of organisms which are present in any individual case, seems to thrive. By so doing, by declining to furnish a suitable culture medium to the abnormal bacterial flora, it tends to die out, and normal conditions are gradually restored.

We have four food stuffs to consider: fat, sugar, starch, and protein.

Protein is very well tolerated, and a diet very high in protein is always advisable. A moderate amount of sugar, such as would be contained in milk, is usually tolerated, and often very much more than this. Starch is as a rule poorly tolerated, even in small amounts, and the very severe cases usually do better without any starch. We have before us then, the problem of nourishing a child on sugar and protein, plus possibly small amounts of starch, with as high caloric a diet as possible, as these children need more calories than the normal child, before they will gain.

It is not easy to withdraw all starch from the diet, as the normal child depends so much on this foodstuff to furnish him calories.

Milk forms the basis of the diet, and lactic acid milk is usually better borne than sweet milk. This should be fat free, and if the child will not take lactic acid milk, boiled fat free sweet milk may be used.

Whereas one would not feed a normal child over a quart of milk a day at the most, it is desirable to feed these children as much milk as possible, usually as much as 48 ounces a day can be used, often somewhat more.

If the child has a good sugar tolerance, and very many of these children do, sugar is advantageously added to the milk, and is a very valuable foodstuff, as it has a high caloric value, and is easily assimilable. Sugar is best given in the form of corn syrup, as originally advocated by Marriott. Corn syrup consists of glucose, maltose, and sucrose, and is a very easily assimilable mixture of carbohydrates. One ounce by volume contains 33 grams of carbohydrate, and furnishes 136 calories. I gave one case nearly five ounces daily, thus furnishing about 600 calories by means of the syrup alone. Usually it is best to start with about two ounces a day, divided between the different feedings, and then to work up if possible.

Meat is the next article of food upon which we have to depend, and although it does not furnish as many calories as does the syrup, it is very satisfying, and adds bulk to the diet.

A child of three years often will take and digest as much as six rounded tablespoonfuls of meat a day, and contrary to the usual idea that meat is difficult of digestion, these children are able usually to digest it better than anything else. The white meat of chicken is the best meat to use, as it contains less fat than most other meat. Two other articles of food which are of value are cottage cheese, and muffins made from casein flour.

Cottage cheese is familiar to most housewives, and is made by adding a teaspoonful of essence of pepsin to a pint of warm skimmed milk. This is allowed to stand until it has "set," when the curd is broken up, and separated from the whey by straining through cheesecloth. It is then lightly salted and broken into fine granular crumbs. It consists almost entirely of casein, and a pint of milk will furnish about three rounded tablespoonfuls of cheese, which contain 60 calories. After a while a child learns to like this, and will usually take 4 or 5 tablespoonfuls daily without trouble.

Casein biscuits may be made from starch free diabetic flour;* the one I have always used being "Diaprotein." It consists almost entirely of casein. These biscuits are rather dry, and not particularly inviting as to taste, but I have never yet seen a child who did not like them. The best way to give them is to break one in small pieces, and moisten it with a little milk. The average child of three years, would take 5 or 6 of these a day.

Made according to the usual recipe, each muffin contains about 65 calories. The usual recipe calls for bacon fat: if this is left out, the caloric value is considerably less, and each muffin would contain only about 25 calories.

The cottage cheese and muffins are more or less interchangeable, being both made up largely of casein, and if I were using one I should probably not use the other. As a general thing most children like the muffins better than the cheese. Let us recapitulate a moment and see exactly what a child of three years, weighing 20 pounds might take on this plan of diet.

48 oz. fat free milk	=480 calories
2 oz. corn syrup	=272 calories
6 rounded tablespoonfuls chicken	=150 calories
6 Diaprotein biscuits	=380 calories
	1282

This gives a total of about 1280 calories, or between sixty and sixty-five calories per pound of body weight: a rather ample diet.

The best starch to add is rice jelly or zwiebach, but in cases with poor starch tolerance one should be in no hurry to add it. If the addition of starch causes undigested stools, it must be again omitted.

If the child is doing well, it is best to let him go along for a considerable period, often several months, without any starch. As far as I know the first to employ an absolutely starch free diet over a long period of time was Sylvester of Boston.

Fat is added by working in a few ounces of whole milk instead of an equal amount of skimmed milk, but if much of this tends to come through in the stools, it must be again omitted.

Of the three vitamins, A, B, and C, there is probably a sufficiency in this diet, with the possible exception of the fat soluble A. Despite this, the lack of this vitamine in such a diet seems to do no harm, and I know of one child who has been on such a diet for a year, and who has done remarkably well.

The fat soluble vitamine can be furnished by a small amount of spinach puree if the child can handle it well, but as a general thing it is better to leave it out.

Cod liver oil is of course a most potent source of this vitamine, and if one is afraid of vitamine deficiency, a half teaspoonful of this three times a day will insure a sufficiency of fat soluble A. An adequate supply of water soluble B and C is probably furnished in the large amounts of milk taken.

The course of this disease, if the case is a severe one is long, and even under the best conditions, progress is slow, and occasional relapses certain.

At the onset of a relapse the bowels should be cleaned out with a good sized dose of castor oil, the child should be put to bed, and nothing given to eat but milk. These relapses are inevitable, and need not cause discouragement. A slight pharyngitis, the cutting of a tooth, getting over-tired or over-excited may be enough to excite diarrhea, and to cause a considerable loss of weight in a short period of time.

To sum up: a disease, the essential nature of which is probably an infection of the contents of the small intestine with organism which should not be there, this infection being usually caused in the first place by over-feeding with too much solid food at too early an age, or by an acute attack of diarrhea. The basis of treatment is a low starch and fat, high protein diet. Nothing whatever in the way of results can be accomplished without considerable painstaking study of each individual case.

DISCUSSION

Dr. A. S. Root, Raleigh: I want to thank Dr. Hill, for the whole Section on Pediatrics and the Section on Practice of Medicine, for having come down from Boston to give us the benefit of this splendid address. As Dr. Harrison said, Dr. Hill lived down here with us some years ago long enough for us to know him and know his work, and long enough, I believe I can say without flattery, for him to know us and like us. I believe that if you would take my good friend Dr. Hill into the next room, take off his shoes and stockings, and examine his feet, you would find a goodly coating of tar upon his heels.

Commenting briefly upon Dr. Hill's paper, it is so complete that there is very little to be said. It has been customary to divide chronic intestinal indigestion into two classes, those cases which are brought about by inherent fault in the child's intestinal tract, and those cases brought about by improper diet extending over a greater or lesser period of time. After hearing this paper this morning I am not sure that the first class of cases exists, although I must say that some children develop cases of chronic intestinal indigestion whose diet has not been grossly at fault. If you have the co-operation of the parents in these cases I do not know of any condition that is more gratifying for the physician to treat, but that often is difficult to get. These cases are more frequently those which are found in unhygienic conditions, children whose diet has never been regulated, children who eat frequently between meals, go to the corner grocery store and eat lots of candy, and who take a very small amount of milk and eggs. If you can get the co-operation of the parents, so that they will follow out the right method of feeding these cases, the results are most excellent. The transformation of such a case from an irritable, anemic child to one normal, healthy, affectionate, docile and happy is almost spectacular. Parents ought to be told in the beginning that they cannot expect results under a year's time, at least.

There is one thing which I believe is a very valuable measure in the cases which have reached an advanced stage, cases that, in spite of the diet, do not seem to progress. These children are pale and wan, and nothing will give them a start so well as a blood transfusion. It helps to put them on their feet, and frequently they begin to pick up from that time.

Dr. I. W. Faison, Charlotte: I would hate to have Dr. Hill come down here and read a paper as worthy as this without all the pediatricians standing up and thanking him for it.

The feature that I would like to have him tell us about is how to keep the parents hitched. They are harder to keep hitched than the children. You can tell them all this, but pretty soon they will be going to the osteopath and the chiropractor. In six months they will be going to some one else, and that has been my trouble with these cases.

I want personally to thank Dr. Hill. I am delighted that he is here, and I appreciate his paper more than I can express.

Dr. L. W. Elias, Asheville: There is one point which Dr. Root brought out, that of blood transfusion, to which I want to refer. It is almost as effective to put these children out in the open air and sunlight, for in that way you will increase their resistance and bring up the blood count.

Dr. Hill has given us a very clear and comprehensive grasp of the whole subject, and I wish to thank him for it.

Dr. J. M. Templeton, Cary: Dr. Hill has discussed a subject of universal interest to the general practitioner, because these cases exist

wherever there are children, and constitute a considerable portion of the general practitioner's patients. He has treated it in so masterly a manner that I might as well attempt to paint the lily or gild refined gold as to attempt to add anything to it.

It has been my custom to divide these cases into two classes, those properly fed and those improperly fed from birth. Take a child whose diet has been all right up to the time it was attacked, and you may expect a favorable result. On the other hand, if a child has been fed on cabbage and fat meat and collards, etc., when that child gets sick it is almost dead already. Those are the cases that try the patience and skill of the doctor, and that require the careful and discriminating dietary which Dr. Hill has described this morning.

In other words, this question of treating intestinal diseases resolves itself into the same thing that a distinguished fellow-townsman of Dr. Hill's said when asked when a child's training should begin. He replied, "Two hundred years before it is born." We might paraphrase that and say that our treatment of a case of this kind should begin the day the child is born.

Dr. Bradsher, Chairman: I am sure that all of us are very glad to have heard Dr. Hill's paper, and that we shall be glad to study it in our Transactions, if it is not ancient history when we get them. It seems to me that we ought to take some steps to get the Transactions into the hands of the members sooner. They are too valuable to have their usefulness destroyed by delayed publication.

Dr. E. J. Wood, Wilmington: I am sure that everybody here will appreciate it very much if we could learn from Dr. Hill where this paper will appear, where it will be published besides the Transactions, because otherwise it will be ancient history before it reaches us.

Dr. Hill, closing the discussion: I have nothing further to say.

X-RAY STUDY OF TUBERCULOUS LUNGS

Thompson Frazer, M. D., and John D. MacRae, M. D.
Asheville

Although the employment of X-rays in the diagnosis of chest affections has been a recognized procedure for many years the significance which should be attached to X-ray findings seems to be unappreciated by the profession as a whole.

The questions that are frequently asked are:

(a) What is the value of X-rays in the diagnosis of tuberculosis?

(b) Is it necessary that they be employed in order to establish a diagnosis?

(c) If not, why should the patient be put to the additional expense which their use entails?

(d) Do X-rays supply any information that cannot be obtained by other methods of examination?

(e) Are the findings in accord with the results obtained by physical examination of the chest?

(f) If not, to which should the greater importance be attached?

(g) Will the X-rays supersede the older methods of examination?

It seems to us that rather definite answers can be given to all of the above questions:

(a) The employment of the X-rays is a procedure of inestimable value in the recognition of tuberculosis.

(b) In many cases, perhaps in most cases, the use of the older methods, history taking, physical examination, and examination of the sputum may suffice to establish a diagnosis. These methods, most available and most important, should never be neglected.

(c) The additional expense involved in making stereoscopic plates is fully justified in that one obtains a more complete clinical picture of the individual case. Secondly, because we are furnished with a permanent graphic record which may be compared with subsequent plates.

(d) X-ray plates do frequently disclose conditions which are not discoverable by older means.

(e) The findings as revealed by the physical examination of the chest and by the X-ray plates are frequently not in strict accordance; not uncommonly the Rœntgenoscopic examination reveals more evidence of pathology than would have been suspected from the physical examination alone.

(f) The information supplied by X-ray plates should be looked upon simply as so much additional evidence which must be properly evaluated. Under no condition should the results of the physical examination be disregarded, nor a final diagnosis be made on the plates alone.

(g) The X-rays, therefore, will not supplant the well recognized methods of examination. The Rœntgenologist, however, should go his full length in describing the lesion. He should make a diagnosis and express a prognosis from X-ray findings alone, his unbiased opinion being unaffected by any knowledge of the physical findings. A correct value must be placed on the changes in the plates; the overlooking of the slighter changes and the reading of too much into the plates being the chief danger to be avoided. There should then be a conference between clinician and Rœntgenologist after which such changes may be made in the conclusions as may be indicated by the joint findings.

INTERPRETATION—NORMAL CHEST

Correct interpretation presupposes a knowledge of the normal chest and while the markings vary greatly in different chests there are some descriptive points which may be applied to all. The normal chest is symmetrical, with the trachea in the mid-line, and the heart and mediastinal organs occupying the center of the chest; on each side of the mediastinum are the hilum or root shadows of the lungs, and radiating from the hili are the trunks which become less conspicuous until the terminal branches at the periphery are almost invisible. In X-ray terminology the word "trunk" is often used. It means the shadow radiating from the root of the lung which is cast by a bronchus, its accompanying vein, artery, lymph masses and lymph channels with connective tissue binding them together. The peripheral branches are important in that it is there that we look for the early lesions.

The right diaphragm is in front of the ninth rib and the left is slightly lower. The phrenic angles are clearly made out and should be fairly acute; the domes arch upward on each side. The lung field on each side of the mediastinum should be clear except for the hila and trunk shadows; shadows about the hila are of little importance unless they are very pronounced. Trunk shadows should be clear cut. Trunk shadows to the lower lobes are somewhat heavier and thicker than those to the upper lobes.

PATHOLOGICAL CHANGES

The changes in the adult chest will be dealt with as follows:

1. Bony framework.
2. Mediastinum.
3. The muscles and soft tissues.
4. The pleura.
5. Lungs.

1. Narrowing of rib spaces means flattening of the chest. This asymmetry may result from an acute pleuritis or from very chronic fibrous disease contracting the lung tissues and limiting expansion in respiration, or from markedly destructive lesions.

2. If the mediastinum is displaced to one side or the other it may be so as the result of fluid accumulating, or by reason of changes which produce contraction or destructive processes which impair the power of the lung to expand.

3. The diaphragm may be depressed by emphysema or drawn up by adhesions.

The mammæ in women may be so developed that they obscure changes in the bases of the lungs.

Contrary to what is commonly expected, if the shadows of the pectoral muscles are very prominent in the X-ray plates, we expect to find an emaciated patient rather than one who is of good muscular development.

4. Pleural thickening is of every degree; fluid or air may be present in the pleural cavities. Effusion into the pleural cavity is common; it may be free or encapsulated. Free fluid does not change its level quickly with change of position but does so strikingly when air or gas exists in the pleural cavity with the fluid. Encapsulated fluid does not change its level.

Thick pleura overlying fluid will cause it to be very difficult to say when the fluid has disappeared, either by aspiration or by absorption.

Pneumothorax is either artificial or spontaneous. It is recognized in the plates when no lung markings are seen and the margins of compressed lung are made out. Unless adhesions between parietal and visceral pleura prevent, the air and gas in the pleural cavity will collect at the place overlying the seat of disease in the lung itself, especially if cavity exists. (Barlow.)

Hydro-pneumothorax is a combination of the two above conditions.

The points above brought out direct our attention to the lung fields for a search of underlying pulmonary conditions, for as we have indicated, these changes are the secondary results which follow in the wake of pulmonary disease.

5. A tuberculous lung shows certain changes which produce variable densities and by the character of these densities it may be determined whether infiltration, fibrosis caseation or calcification exists. (An X-ray record records the varying densities of the objects depicted.) These changes tell us what is taking place in the lung.

Calcification is represented by shadows which are dense and clear cut in outline. The position in which calcification is common is at the root of the lung where the hilus nodes which have been the seat of tuberculous infection have undergone the process of being arrested by calcification. In the lungs of healthy individuals it is rare to find one without calcified nodes about the hilum. These represent the early tuberculous infections which most of us have had and which give us the relative immunity which we possess.

Caseation is the process which precedes calcification, if calcification is to occur, or which precedes cavitation if the patient's disease is going to progress. They represent masses of conglomerate tubercules which are forming cheesy substance. The shadows cast by caseation are not quite so dense as those of calcification and the distribution of caseation is different. More commonly it is distributed well outward from the hila into the parenchyma. Caseation commonly takes place in small masses, hence the X-ray picture of caseating broncho-pneumonia is one showing many dense points widely scattered, or it may be collected into groups. Sometimes a whole lobe may be of uniform density with caseation, or a few small caseating points only may be seen within the lobe.

When conglomerate tubercles caseate and then break down by liquefaction, necrotic material is expelled from the center of the mass and

a cavity is formed. Cavities at first do not have well defined walls but if the patient develops good resistance, firm well defined walls form.

Cavities are commonly seen among the terminal branches of the trunk of the upper lobes. They rarely occur near the hila before destruction has become extensive. A cavity may contain fluid and air. When this is so the fluid level will change as the patient's position is changed, just as it does in hydropneumothorax. Cavities are not necessarily tuberculous in origin.

FIBROSIS may produce very dense shadows but it is laid down in a characteristic way. When fibrosis takes place it represents the scars left by the healing of tuberculous processes which have not advanced to a state of caseation. In the main, fibrosis is found among the terminal branches of a trunk where active infiltrative processes have been arrested. Fibrosis is also found pretty well distributed throughout lung tissue which has been the seat of active tuberculous infiltration. The shadows representing fibrosis are generally laid down in lines and are described as "linear markings." When a lesion is still active but undergoing fibrosis there will be cast shadows which are streaky, and at the same time more or less flocculent; the flocculence represents parenchymal lesions where larger or smaller masses of air cells are filled with debris—mucus, epithelial cells—which is the condition found in early tuberculosis.

Activity. We think that from the changes above described it is possible to discuss with a certain degree of intelligence the question of activity, for the shadows of a distinctly healed tuberculosis are different from the shadows cast by an active process. In the former the shadows are clear cut or striated, in the latter, soft, hazy and flocculent in character and having ill-defined outlines. (In general the location of tuberculous lesions is in the upper lobes; when basal tuberculosis exists it is almost certain to be secondary to processes higher up.)

Emphysema is a condition of low density which should be discussed here. It is generally compensatory. In the presence of chronic fibroid pthisis and also in some other conditions air cells dilate, stretch and loose their power to return to their original size. If emphysema is general the thorax will bulge in all its diameters. Before this extreme condition is reached, the diaphragm is depressed and flattened. The acuteness of the costo phrenic angles is lost as the domes of the diaphragm are pushed downward, and the X-rays penetrate such lungs with greater ease. The radiograph of such a condition is characteristic.

NOT ALL SHADOWS TUBERCULOUS

Now, there are many conditions which may produce shadows other than tuberculosis and "peribronchial tuberculosis" is a term which should be discarded for the bronchi become thickened and cast fuzzy or thick shadows following any of the diseases of childhood—pertussis, measles, scarlet fever, etc.—as well as from pneunokoniosis and chronic

lung affections. If "peribronchial tuberculosis" exists it is usually secondary to more pronounced lesions elsewhere in the chest.

It is characteristic of tuberculosis that its lesions are located in one or both upper lobes and that the different lesions are of different age and different densities. When a uniformly thickened trunk is recognized it is unlike tuberculosis and we think of it as being secondary to *influenza* or some other lung condition.

That condition known as *brown induration* which results from pulmonary stasis secondary to cardiac disease casts a shadow similar to that of influenza. We have seen lungs the seat of actinimycosis which were strikingly like tuberculous lesions; the differential diagnosis being made by the clinical history as well as by the examination of the pathological specimen.

Specific disease of the lung has, in my experience, accompanied tuberculosis oftener than it has existed alone, as numerous post mortem examinations have shown, and in spite of much that I have read I do not feel that differentiation between the two processes can be made readily.

THE VALUE AND LIMITATIONS OF RADIOGRAPHY IN THE DIAGNOSIS AND PROGNOSIS OF PULMONARY TUBERCULOSIS

P. P. McCain, M. D., Sanatorium

Previous to five or six years ago the X-ray was generally considered of very little help in the diagnosing of tuberculosis, and even exhaustive books on this disease up to that time did little more than barely mention its use. The wonderful improvement in X-ray apparatus and X-ray technique, however, and the researches of such men as Miller, who has made valuable additions to our knowledge of the minute anatomy of the lung, and of Dunham in showing the relation of the pathology of tuberculosis to Rœntgen findings, have put radiography on a footing second to none in the diagnosis of this disease.

The first essential for accuracy is good pictures. Stereoscopic plates are absolutely essential. It was not until the development of the stereo-rœntgenogram that chest radiography began to be recognized as of any value. Stereoscopic plates make it possible to determine the location of normal and abnormal densities in all three dimensions. The densities are not superimposed and they can be seen in their proper relation to each other.

A plate changer and stereo-tubestand making it possible to get the two exposures in the upright position while the patient is holding the same breath are greatly to be desired.

Good pictures can be made with a number of different techniques. We have gotten the best results from the use of films with double intensifying screens and a fine focus tube. This gives so much better detail that one accustomed to the "norm" of another technique needs to be on his guard to keep from reading too much into his films.

The second requisite for accuracy is correct interpretation. Before this is possible it is necessary for one to become familiar with the shadows cast by the normal lung structures; he must learn both the gross and the minute anatomy of the lungs; he must have a thorough knowledge of the pathology of tuberculosis; and he must be familiar with the shadows cast by both the destructive and reparative processes in tuberculosis; namely, infiltration and exudation, caseation, cavitation, fibrosis and calcification.

In the adult, tuberculosis almost always begins above the third rib and usually at the apex. Lesions limited to the base have to be considered due to some other cause unless proved to be tuberculous. Owing to the anatomical structure of the lung and to the manner in which tuberculosis spreads, the initial lesion, as Dunham has shown, is cone shaped. The base of the cone is toward the periphery and the apex toward the hilum. Tuberculosis is a chronic disease and various degrees of both destructive and reparative changes are generally to be found. A variety of densities, therefore, is one of the most distinctive characteristics of the shadow cast by a tuberculous lesion on an X-ray plate.

In regard to the kind of shadows cast by the various stages of the tuberculous lesion we may briefly say that infiltration of the perenchyma showing pathological activity appears as a mottled or cottony density with fuzzy outlines and surrounded by a slight hazy density due to collateral inflammation. Caseation casts the densest shadow next to calcification. The shadow is uniform in the center and gradually merges towards its margin into the shadow of infiltration. Cavitation, of course, gives an area of greater transmission of ray, or a "high light," surrounded by a band of greatly increased density. Fibrosis appears usually as bands of considerably increased stringy density or occasionally in cases of massive fibrosis as a homogeneous density with the mediastinal contents drawn toward the affected side. Calcification causes an absolute density with clear cut margins.

The ease with which X-rays pass through the normal lung parenchyma, causing even slight densities from abnormal conditions to stand out in contrast, makes accuracy of diagnosis in chest diseases possible to a greater degree than in most of the other parts of the body.

After six years experience in chest work without the advantages of the X-ray and four years with a checking of my physical findings with stereo-roentgenograms, the writer has a great respect for the X-ray and a fuller sense of the limitations of the physical examination.

For three and a half years we have been making stereoscopic X-ray plates on each patient admitted to the North Carolina Sanatorium. The plates have been read by number only so that they would be interpreted independently of the findings on physical examination. For the past six months the entrance examinations and the X-ray interpretations have been made by different members of the staff. After the findings are recorded separately, a conference is held, at which time the physical and X-ray findings are compared, the history, the

clinical data and the laboratory reports are reviewed, the complications are noted and a prognosis made. When there is a considerable difference between the X-ray and the physical findings the chest is gone over together in an effort to correlate the findings. This study has been of inestimable value to us.

In the short time allotted to this paper a comprehensive presentation of the value and limitations of the X-ray in tuberculosis is impossible, but we wish in the following brief summary to emphasize some of its most important phases and will illustrate with lantern slides.

In the differential diagnosis of tuberculosis from other diseases of the chest, such as lung abscess, interlobar empyema, infarct, pneumonia, etc., the X-ray gives invaluable information.

In the early stage of clinical tuberculosis the X-ray is often of great value and is occasionally sufficient alone to make a diagnosis but in the great majority of cases a correlation of all possible data is necessary.

Occasionally the X-ray will show a definite lesion which is pathologically active when there are no definite physical signs or clinical symptoms. Rarely also the X-ray will show an active lesion at an apex where there are no abnormal physical signs, but where there are suspicious or definite signs at the opposite apex.

With extreme rarity a case will show tubercle bacilli in the sputum which has no definite physical signs and no demonstrable lesion by the X-ray.

Lung lesions limited to the base, which in the adult are almost always non-tuberculous, are occasionally found by the X-ray to be definitely tuberculous. When the X-ray shows no abnormal density or a density not characteristic of tuberculosis, physical signs at the base can with much greater surety be ascribed to some other cause.

In moderately and far advanced disease the X-ray almost always shows the lesions to be more extensive than the physical examination by the most careful clinicians. The X-ray also shows much more accurately the character of the pathological processes. Cavities of even moderate size may occasionally give no physical signs and be discovered by the X-ray.

Small localized pneumothoraces, interlobar pleurisy, scattered areas of calcification, caseation, and many of the other pathological changes which may give only obscure or no physical signs can be determined both in character, location and extent by stereoscopic X-ray plates with a degree of precision which makes a careful X-ray examination in well developed tuberculosis almost the equivalent of a living autopsy.

VACCINES IN THE TREATMENT OF THE SECONDARY INFECTION IN PULMONARY TUBERCULOSIS

Charles Hartwell Cocke, M. D., Asheville

The interest of the medical profession of late has been focused about as intently upon the biological side of therapeutics as upon any other and to judge from the amount of advertising matter which comes to

us in the mails vaccine therapy is running the endocrine enthusiasm a close race for honors. The question of the secondary infection in tuberculosis is still undecided. Unfortunately no one has been able to define with precision its full extent and possible dangers. Some years ago considerable attention was given to this matter and an importance attributed to this infection quite possibly beyond its desserts. Following this the matter has been more or less neglected, or at least put aside, and this paper today is offered by way of a stimulus to the discussion of a subject which needs considerable clarifying. About only one point is there a reasonable amount of agreement and that is that the secondary infection seems to be present in apparently increasing effect with the progress of the tuberculosis. This does not mean, however, that all the symptoms and pathological changes in tuberculosis may not occur as the result of the activity of the tubercle bacillus alone. Paterson, Pottenger, Brown, Fishburg, Corper and Enright, as well as other authorities, are inclined to the belief that the secondary organisms in the sputum in pulmonary tuberculosis ordinarily play an insignificant part in the disease. Norris and Landis feel that at present cavity formation is due in large part to the presence of secondary infection with various pus-producing organisms. Hayes, after a study of numerous autopsies at Oteen thinks the streptococcus bears a casual relation to cavity formation.

The proper interpretation of the finding of various organisms by culture from the sputum of tuberculous patients is by no means easy. While numerous organisms can be grown from the sputum this is by no means evidence that their habitat is the lungs and that if they do come from the lungs that they have an important connection with certain symptoms and pathology. By carefully washing the sputum the incidence of growth is so markedly reduced that some writers have even claimed that it can be reduced to the vanishing point. Most writers feel, however, that there is a mixed infection generally present in the well developed case of pulmonary tuberculosis and the differences of opinion relate to the role of this secondary infection in symptomatology and pathology. Is the mixed infection in tuberculosis a true symbiosis of the other micro-organisms with the tubercle bacillus? If I am correct in the impression that symbiosis means a close association of different organisms essential for the production of certain pathology or clinical symptoms, I hardly feel that it is a true symbiosis since none of these various secondary invaders are essential for the production of tuberculosis. They may fraternize with the tubercle bacillus or simply co-exist with it. Some may stimulate the growth of the tubercle bacillus, others repress it, while it is quite possible for them to have no effect upon it. It is fairly commonly believed, however, that such symptoms as high fever, rapid loss of weight and strength, with harassing cough, may quite well be due to the mixed infection.

Following Wright's teachings of some years ago we entered an era of enthusiastic specific therapy, the results of which have not borne out our first great hopes. The disappointments attendant upon the more or less general use of autogenous vaccines in tuberculosis have

caused some to feel that they have no value and if they have a value that this is quite limited. Agreeing with this latter position this discussion is offered with the idea of trying to find out what is the justifiable ground for the use of bacterial antigens in tuberculosis therapy and under what conditions and restrictions.

As I stated earlier, Wright was perhaps as much responsible for our belief in specific vaccine therapy as any one writer. And, yet very lately in the light of the recent contributions to the subject of nonspecific therapy and resistance he has very materially modified his views. While I cannot give in detail his full conclusions the following quotation is to me of sufficient import to warrant giving it to you here:

"We are, however, here considering primarily the question of principle and in connection with this what is of fundamental importance is: that we should discard the confident dogmatic belief that immunization must be strictly specific. We should instead proceed upon the principle that the best vaccine to employ will always be the vaccine which gives on trial the best immunizing response against the microbes we propose to combat.

"I would point out that this would almost certainly not involve any revolutionary change in the accepted practice in either serum therapy or in prophylactic or ordinary therapeutic inoculation. But it would mean taking into account in cases which proved intractable to treatment with the homologous vaccine the possibility of seeking for collateral immunization by inoculating a microbe or mixture of microbes other than that with which the patient is infected. The trial of this procedure might perhaps recommend itself where from the outset there is very little immunizing response to the homologous vaccine, and also where, as in long standing cases of tubercle or streptococcus infection, the power of direct immunizing response to the corresponding vaccines is becoming exhausted."

While the more common secondary invaders of the lungs in tuberculosis as shown by cultures from sputum are the streptococcus group, the staphylococcus, the pneumococcus, and other cold producing organisms, it should not be forgotten that practically all of these microorganisms have been, and may be found, in the mouths of people apparently in good health. As previously stated the question of the true incidence of these organisms in pulmonary pathology is far from settled. Nor are all writers in agreement as to which organisms give best results in vaccine therapy. The streptococcus group is quite large and as is well known the various strains of it differ among themselves in essential immunological peculiarities. This being the case a streptococcus vaccine should always be autogenous since the effort to produce a polyvalent streptococcic vaccine active against all types would necessarily have to contain so many strains as to make it practically valueless by reason of the multiplication of strains and consequent probable reduction of the content of the essential one to such a point as to make it therapeutically inert. This group has given me the most encouraging results that I have had in this type of therapy, possibly because it offers more hope of specific immune response. Petersen states, however, that the streptococcic vaccine does

not seem to be a good agent for non-specific stimulation while the staphylococcic vaccine is more useful for this purpose. Is the benefit then of the combined streptococcic and staphylococcic vaccine the result of streptococcic specific and staphylococcic non-specific reaction? Since a fairly well marked grade of leucocytosis is present in streptococcus infection does the benefit occasionally seen in such cases arise, at least in part, from this leucocytosis? So far as my reading has gone I can find no publication of comprehensive blood counts in connection with autogenous vaccine therapy in tuberculosis, and therefore it has seemed worth while to me to direct your thoughts to the possible implications here presented. If the white cell count could prove of value in determining the use as well as dosage of an autogenous vaccine, it would materially assist in clarifying a still unsettled question.

It is rare that cultures from the sputum of the tuberculous show the growth of a single organism and this introduces the hazard of improper percentages of the contained organisms in an autogenous vaccine. From day to day there are changes in the bacteria and doubtless further changes as a result of vaccine treatment which may cause certain constituents of the vaccine to become not only useless but even harmful, by the possibility of their prolonging the negative phase. These difficulties, I regret to say, cannot be overcome by study of the opsonic index or by the complement fixation test which can quite readily be vitiated by an intercurrent complication. A positive complement fixation test from one organism does not necessarily give proof that this organism is the offending agent in secondary pulmonary infection. Babcock in discussing the subject of asthma has noted that the autogenous vaccine in general use is made from ærobic cultures and that one possible cause of their failure is this fact and suggests that perhaps better results might be obtained were vaccines made from anærobes which may well be the offending organisms. This might well apply in tuberculosis. At any rate I have never seen the suggestion carried out.

The group of cases which in my experience offers best hope of benefit from autogenous vaccines is the moderately or far advanced case with considerable moisture and profuse expectoration, usually bilateral with or without some fever, that fails to respond to routine conservative treatment, and in whom it is difficult to restore lost weight. A further group in which persistent fever of not very great extent cannot be overcome by the usual methods, may also present a hopeful field after the eradication of all possible focal infection. It would seem superflous to have to note that this attention to foci of infection should always precede autogenous vaccine therapy.

Limiting the use of vaccines as I have done to such a small field, I should explain that I do so as something of a protest against the rather indiscriminate use of vaccines in tuberculosis which one might feel inclined at times to give as a result of the more or less widespread demand of the public at present for some sort of specific treatment. The cure of tuberculosis does not exist in a vaccine. In evaluating the results of such a method of treatment one should naturally give due

weight to the possible psychic boost to the patient of such a treatment, and further also to the possibility of a little better care on the patient's part in taking the cure by reason of the encouragement afforded.

I shall attempt no review of the literature as to the results of men who have given autogenous vaccines a fair trial save to say that Minnig recently reported improvement in eight out of nine cases, first stage; ten out of twelve, second; and fifteen out of forty-two, third stage. Pettit some years ago reported to the National Association for the Study and Prevention of Tuberculosis, now the National Tuberculosis Association, that he had used autogenous vaccines in 280 cases as a protective measure against hemorrhage with satisfying results. Bonney is still quite conservative in regard to their use.

The stock vaccine which is so extensively on the market at present, I cannot discuss from the standpoint of experience. I can see only two good reasons for their administration. The first is that one has concluded that some sort of bacterial antigen is indicated and the autogenous vaccine cannot be had, while the other reason is that one may indulge the hope that the non-specific protein reaction is the essential factor in vaccine therapy. This may be the case when not too violent a focal reaction has been excited, for present day conceptions make it fairly safe to assume that a non-specific injection usually within twenty-four hours will light up with a focal reaction any circumscribed inflammatory process irrespective of its bacterial etiology or its location. Since tuberculous lesions, as pointed out recently by Wolff-Eisner, are perhaps the more sensitive of these various processes because of a more profound sensitization of the tissue cells of the host against protein in general, one should immediately caution that great care be used in a method of therapy which while applicable with benefit to the stimulation of a chronic inflammatory process, in the case of the tubercle offers the hazard of disorganization of the connective tissue capsule sufficiently to cause extension of the process and irreparable injury. Irrespective of these theoretical considerations I very emphatically dissent from the general attempt at therapeutic focal activation in tuberculosis unless one has a very thorough knowledge of the disease and is in intimate, daily, contact with the patient.

One of the encouraging features in the treatment of tuberculosis by those of us who have our patients well away from the more congested city districts, is the fact that there is quite a remarkable and rather general disappearance of secondary organisms from the sputum in cases under treatment. Within recent months I have administered autogenous vaccines in twelve cases, with very helpful results in two cases, and temporary benefit in one case, the vaccines made from the streptococcus group seeming to be most helpful. These cases were practically all third stage cases and I rather strongly oppose the use of vaccines in first stage cases and in any set of cases as a routine measure. Serious damage may at times result from the injudicious or over enthusiastic use of vaccines and I would emphasize what other writers have said that one should begin with small doses, say not over 25 to 50 million at first, and increase very conservatively always

remembering the danger of repeating the dose during the negative phase. This has at times produced a more or less violent general reaction manifested by a chill, or chilliness, general malaise, discomfort, or oppression in the chest, rise in temperature, prostration, etc. Should it occur it is best combatted by a large dose of atropine. The interval between doses should never be less than three whole days, rarely longer than seven, and with five as the safest medium.

It would be well to inquire just how autogenous vaccines may be of benefit in pulmonary tuberculosis. No one today who is cognizant of the facts of biology would be rash enough to discredit the fact that antibody immunity is a vital factor in protection against infectious diseases and in overcoming actual bacterial infection. Specific immune response then presupposes specific infection. The therapeutic effect, however, of the non-specific reaction would seem to be largely independent of the specific antigen-antibody balance irrespective of our ideas of the explanation of this non-specific reaction. The benefit then may well be a combination of both specific and non-specific reaction.

Before closing I wish emphatically again to state my position that autogenous vaccines should never be used in pulmonary tuberculosis as a routine measure. They are of limited value and should be administered only to selected cases free of demonstrable foci of infection who have been sufficiently studied to warrant the attempt at specific therapy by reason of the failure of the usual routine conservative measures. They should never be used to the exclusion of these meaures and if reliance is put upon them with disregard of more essential matters a great deal of damage will result. The dose should be carefully calculated and an attempt at a general reaction of serious nature should not be made. Persistence in their use after a fair and honest trial in the individual case without improvement on the patient's part should be sufficient grounds for discontinuance.

DISCUSSION

Dr. E. J. Wood, Wilmington: I wish to discuss Dr. Cocke's paper. I am not capable of discussing the others, and I do not think they call for discussion, because they have been given to us by experts in their line.

Dr. Cocke's paper is one of the most important and helpful things which I have heard at this session. The thing which has been of the greatest importance to me in what Dr. Cocke has said is the fact that in the preparation of autogenous vaccines for pulmonary infections we have not been considering the biological variations of the bacteria occurring in sputum. With Dr. James G. Dickson, of this Society, I have been at work for about eighteen months to devise some method of preparation of autogenous vaccines of the respiratory tract, trying in some way to eliminate saprophytes, which occur in all mouths and all along the respiratory tract, and yet have no connection with disease. Our work began with asthma. We followed the technique

used by the Rockefeller Institute for Medical Research, in the hope that by so doing we could eliminate those organisms which have no part in the disease process. My younger associate was very skeptical. He said the pneumococcus is present in the mouth of every person. I told him that I appreciated that, but that he did not appreciate the changes in biological qualities brought about by pathogenic activity. We injected sputum from a patient with a respiratory disease into the peritoneal cavity of a white mouse. The mouse became quite sick and died. One organism (M. catarrhalis) was obtained from the peritoneal washings. We got a positive response in the case, a victim of asthma for twenty years, who had had every known food and pollen sensitization with no effect. She made almost an immediate clinical recovery, and remained well almost a year.

The next case was a young woman who had a pulmonary abscess following an ether-tonsil operation. The patient had been in Asheville two months under Dr. Minor. Dr. Minor said there was no tuberculous element, but that she had a pulmonary abscess, and he sent her to Dr. Lilienthal, of Mt. Sinai Hospital, for surgery. Dr. Lilienthal advised surgery reluctantly. When I saw her the cavity was as large as a small grape fruit. We made a vaccine and have seen the abscess decrease to an area about as large as the cross section of a hickory nut. The symptoms have entirely disappeared. In that case, on four or five different occasions, we have made vaccines according to the same plan, and invariably have secured the Type 3 pneumococcus. We use this method only as a means of biological selection, and we believe that it offers a great opportunity. I am on my feet to hand it to my friends in Asheville and to Dr. McCain and his people, in the hope that they will be able to use it in tuberculosis.

We believe that a great fundamental law was overlooked by the Rockefeller people in their pneumonia work. We believe that there is a fundamental underlying power of the mouse whereby the pathogens and the saprophytes are cleaned out by the mouse's normal resistance. We have the field swept clean, all those playing no part in the game swept out of the way, and only the organisms causing the disease to look to. The work has not been published because Dr. Dickson and I are not bacteriologists, and if it were published some highbrow scientists would tear us to pieces. But there is a good principle involved, and we want to hand it to some scientist who will complete it. The point that seemed to us to be most important was that the sputum had not to be washed, and that the sputum had to be used immediately. We had one child in Asheville who had a connection in our town, and the sputum was sent packed in ice. We made a dismal failure in that case, and we failed in one other case. But in most of the cases the results have been a good deal more than we could expect from a non-protein simple sensitization. The thing offers, it seems to me, one of the most promising fields for research that is not research of too high a class for us to follow.

I am very deeply grateful to Dr. Cocke for his paper.

Dr. William Allan, Charlotte: This work of Dr. Cocke's and Dr. Wood's is something that this Section ought to be proud of. As Dr. Wood said, the highbrows may smile, but it is the practical man who does the really important work in bacteriology, and I want to congratulate this Section upon the work done by Dr. Cocke and Dr. Wood. We have very much needed a comprehensive and conservative estimate of the value of vaccines in chronic infections, such as Dr. Cocke has given us.

Dr. Cocke, closing the discussion: As Dr. Wood has given us probably even a more stimulating thought than anything I brought out, I do think the subject merits your consideration and your study. Undoubtedly we have paid too much attention to our rather facile talkers and detail men, and they would lead us into bypaths that would give us difficulties.

What I wish to emphasize is that you should not use autogenous vaccines in pulmonary tuberculosis as a routine measure. We can not afford to be just haphazardly sticking these things into any one that comes along. You must give the patient the benefit of the routine measures, always. The spectacular results are rare, although I have one case in mind that gained sixty pounds in no time, after all other measures had fallen down. The secondary infection is rarely a single organism, and where we can get the measures down to where a certain organism is responsible, then working for a specific reaction, you have an agency to help in tuberculosis, and you have an agency which will give you results when sometimes you can not get them in any other way I know of.

Dr. Bradsher, Chairman: We have in our county a man who has gained more than county-wide reputation by giving vaccine in tuberculosis. I do not know just what it is, but I am told that on Wednesdays and Sundays there are from ten to a hundred vehicles there, bringing people to take the vaccine. In the interest of the general good, such practice should be investigated.

Dr. B. U. Brooks, Durham: Dr. Hill, in his paper this morning, made one remark that impressed me very much. He said that it is just as easy to feed a baby or a child right as to feed him wrong. That is absolutely true. I think the trouble with most of us is that we do not take the trouble to find out how to feed them right. With this idea in view, the question of teaching the mothers how to feed their babies correctly, about eighteen months ago I started in Durham several baby clinics, and it is the report of the first year's work in those clinics that I am going to read to you today.

REPORT OF A YEAR OF INFANT WELFARE WORK

B. U. Brooks, M. D., Durham

The problem of infant mortality as I conceive it from the Pediatrists standpoint concerns itself with that period of life which has passed beyond the mortality due to prenatal influences. That is the problem of the obstetrician and the Public Health Department. It is my belief, and statistics bear out this belief, that the greatest mortality of this period of life is from gastro-intestinal diseases.

Ten years of general practice in a cotton mill village and three years of work in pediatries in a town composed largely of an industrial population has convinced me of the fact that the larger percentage of infant mortality is due to the ignorance of mothers in the matter of proper care and feeding of infants. With these facts in mind and with the desire to do a small part toward lowering this mortality rate, infant welfare stations have been established in various sections of the city of Durham.

An intimate association and acquaintance with the peculiarities of the people most needing this work has convinced me that it is a matter of education in which time, patience, and tact are essentials. It requires time to educate people in any matters which have been left to go in a haphazard manner, especially when these haphazard methods have produced certain results which are perceivable while the newer methods are to them still untried and their results unknown. The very fact that we propose to produce results which are unknown to these people and that a great amount of time is required to produce these results in a manner which may be appreciated implies patience, perseverance, faith and a vision of the ultimate possibilities. There is no greater essential than tact. To lead one unconsciously, step by step, without offense from a wilderness of ignorance and superstition by which one has been surrounded for generations, into the broad fields of enlightenment requires infinite tact.

Knowing the peculiarities of the people who most needed this work, I am convinced of the fact that it must be brought to their doors in order to elicit their interest. Bearing this fact in mind the first of our clinics was established in East Durham, and in order to arouse a little community interest in the beginning the clinic was opened in the Baptist Church, and the services of the Pastor's Aid was enlisted. Patience, perseverance and a hundred per cent attendance, by the person in charge of the clinic are of the greatest importance. There must be no discouragement, there must be no lack of perseverance, there must be no absence from the clinic if success is to be attained. The hundred per cent attendance, I consider the first essential of success. One absence will undo the work of months.

A great element of success in this first clinic was due to the efforts of a Public Health Nurse, of untiring energy, Miss Seymore, and to the loyal and whole hearted co-operation of Miss Jenks, the Pastor's Aid in the East Durham Baptist Church. After carefully and thor-

oughly considering the details of the establishment of the clinic, it was decided to have only well babies in attendance. This was done for several reasons. First because on account of the element of time it was decided that a large number of mothers and babies could be reached in this way. Second, because we did not consider it advisable to expose well babies to the various ills of the sick ones. Third, because it was felt that a greater amount of good could be accomplished in the prevention of illness than could be accomplished in treating those who had become ill. The slogan then in our clinics is—"Keep the Baby Well," and in this we are exerting all our efforts.

A comparatively small amount of equipment is needed to establish a clinic but this little equipment is essential. A room must be provided which will accommodate the mothers and babies, and heat must be provided for this room, chairs, a small examining table with a pad, a few sheets and a good scale complete the equipment. I have found a beam scale with a large scoop to be the most satisfactory. A scale which weighs and registers by spring I have found too variable to test the weekly change in the weight of the infant.

After three or four months work in the one clinic during which time all the details were worked out and it had become an established thing, the plan was presented to the Red Cross with the result that a whole time nurse was employed for the Infant Welfare Work and the other clinics were established in various sections of the town, five in all. Two of these clinics have been subsequently discontinued on account of lack of interest and lack of attendance. I do not believe it wise or proper to give the impression to those concerned that we are begging them to attend the clinics, because that class of patient will always lack interest. I prefer rather to present the matter in a straightforward manner showing the mother that it is to her interest and the interest of her child to keep the baby well. If I fail in this the clinic can never be a success. The discouragement here arises in the fact that these people who most need the clinic are the hardest to convince of its usefulness.

The clinic is conducted and the patient treated very much as a patient is treated in the office, with the exception that the history is a little more brief. A short history of each child is taken upon admission. This history includes the name of parent and child, the birth weight of the child, the previous feeding history, history of any previous illness, etc. The baby is then stripped and weighed and this weight recorded on the chart. As soon as this has been completed the patient is turned over to the doctor for examination. A complete physical examination is made of each child upon admission and any defects noted on the chart. At subsequent visits no complete examination is made unless the child has had some illness since the last visit to the clinic. At each subsequent visit the child is weighed to determine if satisfactory gain has been made. The feedings are then adjusted as needed. At the first visit certain instructions in regard to feeding the infant are given to each mother and an effort is made to convince the mother of the wisdom of carrying out these instructions.

The feeding interval advised in the vast majority of cases has been three hours, until about the fourth or fifth month when the four hour interval has been advised. Irregularity of feedings I have found to be almost a universal custom among the patients attending these clinics. A determined effort has been made to correct this error and homely illustrations are used to impress the necessity of this procedure upon the mother. The mother has been instructed to put the baby to bed and to rest immediately following each feeding and to leave him alone for at least two hours. I believe this to be of great value in the proper nutrition and good health of the infant. The practice of handling, playing with or juggling the baby who has just had a full meal I have found to be very common and in my judgment a most pernicious habit. Many of these mothers, indeed I may say, most of them have the age old idea that whenever the baby cries it is hungry and this I believe in a great measure accounts for the irregular feeding. I advise the free use of plain warm boiled water in a bottle. This I advise is necessary for two very important reasons. First, every baby needs and wants water three or four times daily at least. Second, because it accustoms the babies to the use of the bottle and then when it becomes necessary to feed them, as it usually does before the first year of life has passed, the baby takes the milk without trouble.

Whenever the weight curve among the breast fed begins to indicate that the infant is not securing the necessary amount of nourishment for its proper growth and development every effort is made to get the mother in better physical condition. More fresh air, more milk, more balanced diet, recreation, change from the routine of home life is advised in the hope that the nourishment will be increased. In some cases this is effectual but in my experience has proved rather disappointing. When it is found that the mother is not producing the required food for proper development the infant is immediately put upon complemental feedings. The baby is nursed regularly as in the past and the requirement of food is made up from the bottle following the nursing.

The food prescribed for the most part has been Dryco. This I have found easy of preparation, it is served to the infant in a practically sterile state, thus eliminating milk infections from that source to a great extent, and above all it is fool proof. Any mother may be trusted to mix with sufficient accuracy for all practical purposes, two tablespoonfuls of Dryco and four ounces of warm boiled water in such a manner as to feed it to her baby.

When the infant has reached the age of nine months we begin to instruct the mother in the method of making the transition from a liquid to a solid diet. This has been done by the use first of cereal waters, then cereal gruels, and later strained cereals, bread, toast and zwieback, etc. After the first year of life printed diet lists are given out with specific instructions for the quantity and preparation of food and the hours of feeding. This same method is followed throughout the child life until the patient has passed beyond what we consider the clinic age.

The interest aroused and the co-operation secured may be shown by the fact that in one of our clinics it is no unusual occurrence to have twenty or more babies at one clinic. The highest attendance to date has been twenty-seven at one clinic. An effort is made to create a certain amount of friendly rivalry among the mothers in the development of their babies, to make the least healthy one of the babies compare favorably with the most healthy. Not the least of the benefits derived by the mothers of these babies is the opportunity to get away from the humdrum routine of life in the home, to get an opportunity for a little change of scene and life, to get a little taste of the community gossip and news and to see life from the neighbor's viewpoint. In other words we are attempting to make of our clinics a sort of community center where various domestic problems in addition to the baby may be discussed.

Certain statistics covering the work have been compiled and will be quoted.

The statistics quoted cover a period of one year, from October 1, 1920 to October 1, 1921 and are compiled from four clinics. The fifth clinic was closed on account of lack of interest and non-attendance.

During this period of one year there was a total of 405 babies registered at the clinics and a total of 1123 visits to the clinics, an average weekly attendance of 21.6 babies. Approximately 75% of these attendants were under two years of age. 14.5% of the babies registered attended the clinic for a period exceeding four months. This low percentage is probably due to the fact that the clinic has been established only one year and a certain period of time is required to get it established and going.

The average weekly gain of the feeding babies, that is those under fifteen months of age was 4.3 ounces. An interesting observation in the clinic was the average time at which the nursing mother begins to fail to provide sufficient nourishment for her baby. In our observation this period occurred between five and one-half and six months. With supplementary feeding these babies showed an average weekly gain of 4.6 ounces. Of the babies admitted under six months of age 85% were breast fed, showing a much higher percentage than the average for breast feeding.

In reporting this work we make no claims to any original ideas or practices. We have merely seen the needs of such work, have grasped the opportunity to render what we consider a needed service in our community and we pass it on with the hope that it may awake others in various sections of the State to this need and to stimulate an interest and a desire on their part to join in the fight to lower mortality in a field which promises visible results.

Our work is education. Our reward is consciousness of rendering service where service is needed.

DISCUSSION

Dr. J. Buren Sidbury, Wilmington: I think that we owe Dr. Brooks a vote of thanks for bringing this paper before these Sections. He has shown us what can be done, and what can be done in Durham can

be done in any other town of North Carolina or the South. His work impresses me from the standpoint of education, which I think is the greatest part of preventive medicine. Keeping the well baby well is probably the most far-reaching program of any we can adopt. If we can teach the mothers how to keep the well baby well, we are falling in line with what our State Board of Health and all progressive organizations are trying to do, and in that way we can do a great deal more than in trying to cure the sick baby.

I judge that Dr. Brooks does not have a milk station, and it seems to me the only feasible thing he has done. He has selected a fool-proof food, as he says. Dry milk is the best food to give an unintelligent mother. She will make fewer mistakes with it certainly than with a liquid food.

In 1916, in Wilmington, we established at the same time a milk station and a baby clinic, which were established by two women's organizations, the King's Daughters and the Sorosis. Both are in the same building, and are kept together as nearly as possible. We have taken care of mainly sick babies, since we have a great deal of gastro-intestinal trouble in the summer-time. We have a milk station, and the doctors can prescribe for that as for any drug store. A trained nurse is in charge, and takes care of it. Twice a week we have a clinic. They come and get the milk each day. Tuesdays and Thursdays they bring the sick as well as the well babies to the clinic. We have not stressed as much as Dr. Brooks has "keeping the well babies well," though after we have gotten sick babies well we have had them brought back to keep up with their weight. We have babies from one to three. Since there were only two or three men interested in the baby end of it, it took considerable time, so we put the age limit at three.

Personally, I want to thank Dr. Brooks for emphasizing the slogan, "Keep the well baby well."

Dr. Harrison, Chairman: There is no reason why we should not have baby clinics in every small community. It does not have to be a city. A great deal of good can be accomplished in this way, and I hope that some of the doctors will follow Dr. Brooks' lead.

Dr. Wm. deB. MacNider, Chapel Hill: I am not in position, of course, to discuss Dr. Brooks's paper from the standpoint of a pediatrician, but I can say something about it from the standpoint of humanity. I think he has done a rather remarkable piece of work, and I do not see how doctors in almost any town, after walking through the cemetery, can fail to let this suggestion of his strike pretty deep into their hearts. Durham is just twelve miles from my home town, and I think it is a fair statement that some years ago the mortality among babies there was terrific. The trouble is that the mothers do not know how to take care of the babies, and of course a lot of the doctors do not know. Certainly, since Dr. Brooks has started this work in Durham, the mortality among children has dropped wonderfully. It is a piece of work that ought to make Dr. Brooks extremely

happy, and it is so suggestive that doctors from other towns, small and large, should follow his lead. I certainly appreciate Dr. Brooks's work, and the report which he has given us in this paper.

Dr. G. H. Macon, Warrenton: My good friend, Dr. Root, first put me on to dry milk, and I have used it quite extensively in my practice, with excellent results. In a very few cases of mine I have had to substitute Klim in place of dry milk, but those cases are exceedingly rare. Two of my own children were fed exclusively on dry milk, and, unlike the other foods, dry milk seems nearer mother's milk in every particular than any food that I have ever used. The dry milk children that I have seen are strong, healthy, and with excellent resisting power.

I certainly did enjoy Dr. Brooks's paper, for I really wanted to know the experience of other men with this most ideal food. I must say that the Section on Pediatrics is the best that I have ever attended, and it has been well worth my time to listen to the various speakers and hear the discussions.

Dr. Brooks, closing the discussion: I appreciate the discussion of my paper. There is one objection that I have to the establishment of milk stations. I believe that the great problem in North Carolina is education—education not only from a literary standpoint, but education from superstition and prejudice. When you have a milk station the mother comes to the milk station, gets her formula in a bottle, takes it back home and feeds her baby. Two years thereafter she comes back with another baby and she knows not a bit more about feeding the second baby than she did the first. In other words, you are pauperizing her instead of educating her. I believe that the problem in this State is education, and that is the thing I bear in mind when I go to my clinic. Educate the mother in the proper method of caring for the baby and bringing it up in a healthy, normal state, and not feeding it cakes and candy and Coca-cola and various other things they should not get.

THE APPENDICULAR LIVER AND KIDNEY
(With Report of Cases)

Lewis H. Swindell, M. D., Washington

Appendicitis, a condition so simple at times, and so difficult and obscure and treacherous at others, that those who have the keenest intuitive powers are unable to diagnose and prognose its terminations and complications.

There are some of you, no doubt, who will disagree with me when I say appendicitis is not a medical case, but a surgical case, and will think it queer that I have selected a surgical case to read before a medical section.

It is for this reason that I have selected this subject, for those of us who at times are too prone to say when we are called to a case of appendicitis, "Oh, it is only a mild case of appendicitis, maybe it will clear up," and we wait until the evil of toxic complications or infectious troubles so gets hold on the patient that surgery is powerless against them. For the gravity of the appendiceal lesions is not always in direct relation to the intensity of the symptoms.

The Appendicular Liver is the name given to the toxi-infection of the liver consecutive to appendicitis.

The masterly description of the appendicular liver, made by the great Dieulafoy, taught us that the organ often suffers in appendicitis patients either from acute alterations in the parenchyma, due to the microbic toxins, or even by the localization in the liver of microbes carried there by appendicular veins and the branches of the portal vein.

From its situation the liver receives the frontal attack of the toxins and microbes, whose virulence have been increased in the closed cavity.

Soon after the onset of appendicitis the liver may be affected by the toxins which are carried more rapidly than the microbes; a change in the hepatic cells which deserves the name of toxic hepatitis, is the result. This early toxic hepatitis does not suppurate. Later, during the second or third week of appendicitis, the microbes are carried to the liver and cause a purulent hepatitis. It is, therefore, indispensable to describe separately toxic and purulent hepatitis.

I.—TOXIC HEPATITIS

Occurs early and is accompanied by neither hepatic pain nor violent symptoms. The main symptoms: jaundice, choluria, urobilinuria and albuminuria.

The main symptoms which I wish to describe—toxic jaundice—may appear on 2nd or 3rd day of an attack of appendicitis. It is not often marked but only a slight yellow tint, more pronounced in conjunctiva and face, and it is only in exceptional cases that it becomes general like true jaundice. The jaundice is not of long duration and quickly disappears after appendectomy. This form of jaundice is sometimes the sole evidence of the appendicular toxicity, but most frequently it is associated with albuminuria as a second sign. In patients suffering from appendicitis, we must always look for jaundice and albuminuria, and urine must always be examined for pigment, albumen and casts, because all of these signs, formerly and even now too much neglected, point to the impregnation of the system by the appendicular toxines.

II.—INFECTIVE PURULENT HEPATITIS

This toxic hepatitis, as I have said, occurs early and is accompanied neither by hepatic pain nor violent symptoms. Purulent hepatitis, due to infection by the appendicular microbes is quite different. It

appears during the decline or convalescence of appendicitis, and is accompanied by sharp rigors, severe fever, pains in the hypochondrium, rapid increase in size of liver, jaundice, etc.

REPORT OF CASES

Case 1.—Mr. A. was operated on in Norfolk for acute gangrenous appendicitis. Drainage put in. Patient got along very well for two weeks when he begun to have chills and run a high fever. This continued for about two weeks when a second operation was done, thinking probably there was an abscess which was not draining. At this operation nothing was found. Patient improved and in two weeks got out of hospital and went to Belhaven to recuperate. About one week later patient begun to have chills and rigors the second time, turned jaundiced, liver became enlarged and very painful and tender. He was brought to F. M. Hospital, Washington, N. C. This was about five weeks since his first operation. After entering hospital, on examination, we found liver very much enlarged and very painful and tender. A distinct jaundice extended over whole body. This jaundice persisted, with daily remission of fever, ranging from 103-105, for about one week when patient died. Post-mortem examination confirmed diagnosis. Liver was very large, weighed about 100 ounces, surface showed at various points yellowish or brownish projections—consistency of organ was soft, sections of lobe revealed abscesses everywhere, the gland being riddled with them.

Case 2.—I was called to a patient December 26, 1921. He gave history of previous attack of appendicitis. I had been to him with two previous attacks of only slight pain in right lower abdomen, no tenderness, no rigidity. I would give him a mild purgative and condition would clear up. This time, December 26, 1921, he had a more severe attack. Temperature was only 100, pain not severe, but he had a sick, anxious look, was slightly jaundiced. I advised operation and brought him to hospital. An immediate operation was performed and we found a gangrenous appendix. Appendix removed and drainage inserted. Drainage removed in 3 or 4 days. Patient got along nicely for two weeks when he began to run a temperature. Turned slightly jaundiced, liver became enlarged and tender. This jaundice with remission of fever, gastric intolerance and vomiting continued for two weeks when patient died. Post-mortem examination revealed a very large liver, soft in consistency, riddled with multiple abscesses.

This hepatic infection is one of the most terrible complications of appendicitis. Dieulafoy reports only two cases to have recovered from multiple abscess of liver. As a matter of fact, however successful the surgeon may be in solitary abscess, intervention is hopeless in appendicular infection where abscesses of the liver are counted by the dozens.

In appendicitis we must never wait, for we can never know what the future has in store for us. So, therefore, let us never forget that the fatal consequences of appendicitis are by no means always in relation to the intensity of the symptoms.

APPENDICULAR KIDNEY—TOXIC NEPHRITIS
APPENDICULAR ALBUMINURIA

Reduced to its simplest terms, toxic appendicular nephritis reveals itself by a single sign—albuminuria.

In nearly all severe cases of appendicitis, the effect on the kidneys is at once shown by albuminuria. The albumen may appear on the 1st, 2nd or 3rd day and is sometimes associated with slight jaundice which also indicates toxic poisoning. Simple albuminuria, which yields after resection of the appendix, is, I repeat, the only symptom of slight appendicular nephritis. In such cases the renal lesion is neither severe nor lasting, and yet we must not trust this apparent benignity, because this simple albuminuria, whether it be associated or not with jaundice, is at times the first warning of grave trouble which may end in death.

From the clinical point of view appendicular nephritis does not resemble other known forms of acute nephritis. It is not comparable with scarlatinal or early syphilitic nephritis. Swelling of the face and of the eyelids, acute œdema, dropsy, œdema of lungs, and of serous effusion which are seen in other kinds of acute nephritis are not present in appendicular nephritis. Oedema of the eyelids and of the face is absent, and as appendicular nephritis does not show itself as a rule by any visible sign, the diagnosis is by no means evident, and therefore this variety of nephritis has passed unnoticed.

Albumen, which is often abundant in other forms of acute nephritis, is generally scanty in the appendicular form. On the other hand granular casts may be found in the urine as early as the 2nd or 3rd day, and are a bad sign. Albumen alone does not make the prognosis of appendicitis absolutely bad, but it is a sign of poisoning and a danger signal. This danger does not come from the nephritis alone; it arises also from the general intoxication of the system—that is, from appendicæmia.

Jaundice, which indicates the involvement of the liver, is fairly often associated with albuminuria. These two signs generally appear early and together.

Their signification may not be fatal and yet no one can say whether the intoxication will confine itself to slight nephritis or hepatitis, or whether it will end in more extensive lesions such as toxic gastritis, vomito negro, renal or hepatic insufficiency, nervous complications, general poisoning and death.

The history of appendicitis is always deceptive and the poison often accomplishes its work without giving any sign. We see then the errors in the old description of appendicitis as a purely local disease in which the worst complication was peritonitis.

The patient, therefore, does not succumb to the circumscribed peritonitis, but the appendicular poisoning which precedes more rapidly than the infection. Peritonitis is not the all-important complication in appendicitis, we must take account of the toxic complication which sometimes precedes the infectious troubles, and are the more to be feared as surgery is powerless against them.

In closing let me draw a parallel between the appendicular liver and the appendicular kidney.

I described separately early toxic hepatitis, which is non-suppurative, and infective hepatitis, which occurs later and occupies a promi-

nent place in the history of the appendicular liver. This purulent hepatitis is readily explained, because the infective agents are carried direct from appendix to the liver by the tributaries of the portal vein. It is not so in the case of the appendicular kidney, which can only become infected by a circuitous path; consequently infective nephritis with abscess of the kidney is relatively very rare, whilst toxic nephritis, especially the slight form, is common.

DISCUSSION

Dr. Wm. deB. MacNider, Chapel Hill: I enjoyed that paper immensely, and I think it has a great big thought in it. I think that we are too apt to think about the kidney in terms of an isolated organ, and it is pretty unusual to think of the kidney in terms of the organism as a whole. I think there is a great deal in the suggestion that has been made, that some kidney conditions are secondary to liver conditions. In fact, I am quite certain of it. Likely that is true for certain acute abdominal affections. There is certainly one thing that happens when the liver is injured, whether from a toxin or from an active bacterial invasion, and that is a using up of the alkali of the blood. You get an acidosis. There is a great deal in it if the thing is thought of in a judicial fashion. Not infrequently, secondary to the liver condition you do get a marked kidney condition, and the amount of albumen you find in the kidney is enormous. I do not like to bring up a subject that will make any one sad, but it is a truth which I want to state, that there is nothing I know of that will so readily bring about this sequence that has been mentioned, with the liver injury as the primary thing and the kidney injury as the secondary thing, as the blockade whiskey that is all over the country, especially the variety called monkey rum. It is extremely interesting. Give this to dogs in amounts to cause moderate intoxication once a day, and if you shoot them at the end of about a week you will be perfectly amazed at the changes that have taken place in the liver. It is yellow from bile; it is away down below the intercostal margin, and it is riddled with fat. If you keep up the poison—and that is exactly what it is—at the end of about two weeks you will get a using up of the alkali reserve of the blood, and you get well defined symptoms of an acid intoxication, and there is so much albumen in the urine that you cannot measure it by the ordinary measures. Animals killed at that stage show marked changes in the renal epithelium. Associated with that you get a reduced output of phenolsulphonephthalein.

I am glad to have an opportunity to mention this. The work is not yet in a condition for publication, but I am quite certain that the use of blockade whiskey, and especially that variety made from molasses, is going to get a great many people into serious and permanent trouble.

I think the point brought out is splendid. The older doctors used to know that, and we came along and laughed at it. They ascribed a great many conditions to the liver, and would purge people. If we are going to solve a great many riddles in the body we have to think

of two things: First, not of organs as isolated entities, but as organs dependent upon one another; and, second, I am quite sure that we have to think more of the kidneys in terms of a reflection of something that has happened in the liver than we are accustomed to thinking.

Dr. Harrison, Chairman: This is certainly a most interesting paper, and the thought is new to me. We are fortunate in having Dr. MacNider here to give us some intelligent discussion and enlightenment on this phase, and I hope that we shall have more discussion.

Dr. Swindell, closing the discussion: I thank the gentlemen for the discussion. One thing about appendicitis which has impressed me in my practice is that the patients will come in with what we think is a simple case of appendicitis. An appendectomy is performed, and the patient will get along well for a week or two, then will begin to have chills, rigors, etc., and will die. We often wonder what is the cause of death in these cases. The operation is successful, the symptoms not severe. Then an autopsy is performed and the condition revealed, and we find the liver either riddled with multiple abscesses or a large solitary abscess.

DISORDERS OF THE HEART MECHANISM

J. P. Munroe, M. D., Charlotte

The conceptions of heart failure and the role which valvular defects and myocardial degeneration play in its production have undergone radical revision in the past ten years. This has been largely due to the investigations inaugurated by McKenzie & Lewis and their work with instruments of precision—the X-ray, Polygraph and Electrocardiograph.

But Lewis has done another work of equal importance. Beginning several years ago, he led the way to the discovery of simple tests by which we may recognize most of the important disorders of the heart's mechanism.

Since graphic methods of study are out of the question for many patients, it is important to become expert in differentiating these disturbances of mechanism by simple methods that require no complicated apparatus.

GENERAL ETIOLOGY AND PATHOLOGY

While temporary, mild disturbances are sometimes caused by toxins, by medicines given injudiciously, or by disease in other organs; in general, the etiological and pathological factors back of most of these conditions are rheumatic infection, syphilis, myocardial degeneration, or arterio-sclerosis. There may or may not be valvular defects or stenosis. The essential thing is the degree of integrity of the heart muscle and of the conduction system conveying impulses to it.

Normally, the impulse begins in the pacemaker, the sino-auricular node situated at the junction of the superior vena cava and the right auricle. It travels through the auricular muscular fibres and causes contraction of the auricle. From the auricle, it is transmitted to the auricular ventricular node, and thence, through the branches of the bundle of His to the ventricles. Each auricular systole occurs in regular rhythm at a rate of about 72 to 80 per minute and is followed, similarly in about .15 second by a ventricular contraction.

The most common disorders, and the ones that are discussed here are:

1. Sinus Arrythmia.
2. Heart-block.
3. Premature contractíons or extrasystoles.
4. Simple paroxysmal tachycardia.
5. Auricular flutter.
6. Auricular fibrillation.
7. Alternation of the heart.

I.—SINUS ARRYTHMIA

There is a gradual waning and waxing of auricular rate which is repeated periodically and which is followed exactly by the ventricle. It is found in young adults who show an increased heart rate on deep inspiration and decreased on expiration, even when there is no increase of respiratory movement. A similar irregularity is found often in young children. It is of vagal origin and is not a serious condition. It is the most frequent condition that brings the mother to consult the physician about the irregular heart of a child. The radial beats and apex pulsations correspond. These vagal irregularities all disappear when the average pulse rate is increased by exercise, fever, amyl nitrite or atropine. They require no treatment and the child's activities should not be restricted on account of them.

II.—HEART-BLOCK

This is a condition in which the impulses from the pacemaker fail either partially or totally to reach the ventricles and excite the usual rhythmic contraction. In the former event, there is partial heart-block; in the latter, complete heart-block. A slight impairment of the conduction tissues uniting auricle with ventricle causes a retardation of response or prolongation of the interval between the auricular and ventricular systole. This is called first degree heart-block. Where the heart-block is higher, the ventricles fail entirely to respond to occasional auricular impulses, and this causes what is called "dropped beats" or second degree heart-block.

In a still higher grade, the ventricle responds to every alternate impulse from the auricle—this is 2: 1 heart-block. Still higher grades are 3: 1, and 4: 1 heart-blocks. When no impulses from the auricle reach the ventricle, we have complete heart-block. The ventricle then

contracts in response to impulses originating either in the lower part of the "bundle of His" or in the ventricular walls. This results in a rhythmic slow contraction of 45 to 30 or less.

CAUSES

Too free use of digitalis may cause what is sometimes called functional heart-block. It may induce heart-block in a heart already predisposed to it. Organic heart-block is produced by syphilis, rheumatism, arteriosclerosis, diphtheria, and other infections probably in the order named as to frequency.

REPORT OF CASE

Case 1.—Several years ago I saw, in a neighboring city, a case of pneumonia to which we decided to give digitalis. Ten days later, I was hurriedly summoned to come again on account of threatened heart failure. It was found that the pulse which had been beating about 90 to 100 per minute had suddenly dropped to 45. Palpation and auscultation over the ventricle showed that ventricular contractions were also 45. I diagnosed digitalis accumulation and advised its discontinuance. The patient recovered promptly. This was a case of 2: 1 heart-block—the ventricles corresponding to every other one of the auricular contractions.

III.—PREMATURE CONTRACTION

In many persons, the pulse beats regularly for longer or shorter periods and then an occasional disturbance is noticed. The pulse intermits, or as is frequently said, skips a beat. By examining the heart, it is found that a ventricular contraction of the heart occurs before the rhythmic beat is due. This heart pulse is not only premature in incidence, but is weak; so that the impulse in most instances is not communicated to the radial pulse. After this beat, there is a pause of unusual length. The impulses producing these premature contractions sometimes arise in the auricle, but more often in some irritable focus in the ventricle.

CAUSES

Often associated with mitral stenosis, with aortic incompetence, and oftener with degeneration of the heart muscles. Probably the majority of those who live to middle or advanced life are affected at one time or another with premature contraction. It is found in rheumatics, in those who seldom take a vacation, in young men who smoke excessively. Fatigue, subsequent to exertion, is provocative in all who are predisposed. It generally disappears on exercise and when the temperature rises.

It is easily recognized. The radial pulse presents either a prolonged pause or a feeble pulsation. Auscultation reveals premature first and second sounds or premature first sound alone, if the aortic cusps are not raised.

REPORT OF CASE

Case 2.—Recently, I was examining a brother physician for indisposition following exposure and exhaustion. I was surprised to find that, occasionally, the pulse intermitted. Palpation and auscultation of the ventricle showed that there was a weak contraction of the ventricle coming earlier than the usual contraction, and then followed a longer pause than usual. This weak contraction did not reach the aortic cusps, nor produce any radial pulse. This is premature contraction or extrasystole as it is sometimes called. It disappeared soon afterwards when the patient's temperature rose.

IV.—PAROXYSMAL TACHYCARDIA

This term is restricted to cases that usually present a normal heart mechanism, but from time to time the normal action is interrupted by a series of rapid and regular beats, the series starting and ending abruptly. The pulse varies in rate between 100 to 200.

True paroxysmal tachycardia is absolutely abrupt in onset and absolutely sudden in cessation. The rapidity persists for a few minutes or for weeks. It is a continued, rapid succession of premature beats, arising from an irritable focus located, usually, in the auricle, rarely in the ventricle.

REPORT OF CASE

Case 3.—There is a lady under my general care who, for several years, has had occasional attacks of tachycardia. The attack comes on usually in the middle of the night and there is a feeling of constriction or compression across the chest, palpitation of the heart, a pulse of about 200 and an anxious, distressed condition that makes her feel as if death is impending. This condition lasts for 2 or 3 hours when the pulse suddenly becomes normal and she lies down exhausted, is nauseated and vomits frequently for 2 or 3 days. These attacks occur at irregular intervals of several months and except for slight apprehension of a return, she feels comparatively well during the intervals. Graphic records show nothing abnormal during these intervals. This is a case of paroxysmal tachycardia.

V.—AURICULAR FLUTTER

Auricular flutter is a condition in which an abnormal focus in the auricle gives rise to rapid, regular impulses which cause the auricle to contract at 200 to 350 per minute. Lewis describes this pathological wave as following a circular path requiring 1/200 to 1/350 of a minute to complete the circuit. There is a partial failure of conductivity of the impulses to the ventricle—usually only half the impulses get the response in the ventricle making, in reality, a 2: 1 heart-block.

Digitalis is the remedy indicated. It may change flutter to fibrillation and then, after the drug is discontinued, normal rhythm is restored.

VI.—AURICULAR FIBRILLATION

Auricular fibrillation is a condition in which the normal, regular impulses arising in the heart's "pacemaker" are replaced by numerous abnormal impulses arising in various irritable foci in the auricle. The waves of the impulses travel continuously in a haphazard way, very like waves of water when a series of pebbles are being constantly thrown into it. The result is that the auricle is thrown into a sort of fibrillary tremor. Some of the haphazard impulses reach the ventricles and there induce haphazard ventricular contractions, irregular as to rate, rhythm and volume—Delirium Cordis it is called.

THE PULSE

The pulse in auricular fibrillation is usually rapid, 120 or more, but occasionally is slow. The characteristic thing is that it is absolutely and continuously irregular. It varies in rate, now fast, now slower, in rhythm and in volume.

VENTRICULAR CONTRACTIONS

Palpation and auscultation reveal a disordered, tumultuous action of the ventricles. First sounds and second sounds are difficult to distinguish and the ear may be confused by a Babel of sounds.

PULSE DEFICIT

There is a deficiency of pulse count as compared with ventricular rate. Count the ventricular beats either by auscultation or palpation, and there may be a difference of 20 or more. This is due to the fact that some of the ventricular contractions are so weak that they fail to raise the aortic cusps and so the impulse fails to reach the wrist.

EFFECTS OF EXERCISE

The irregularities of fibrillation are increased by exercise and decreased by rest. The contrary is true of other irregularities of the pulse—they decrease on exercise and increase on rest.

REPORT OF CASE

Case 4.—A man, T. C. M., age 35, entered the hospital December 7, 1920, complaining of insomnia, breathlessness, and pain in the region of the heart. His pulse was absolutely irregular in rate, rhythm, and volume. The rate averaged about 100. Auscultation showed tumultuous disorder of the ventricle. For an instant, one could seem to hear first and second heart sounds—then only one sound was present and it was difficult to say whether it was first or second. A count of the ventricular contractions and pulse beats made at the same time showed a difference of 20, the pulse being 100 and the ventricle 120. This is called pulse deficit; and with the irregular pulse and disordered tumultuous ventricle, presented a typical case of auricular fibrillation.

Slight exercise increased the heart rate and caused the irregularity to become more pronounced. Morphine was given for a while to relieve the pain and secure sleep. The Wassermann was positive and specific treatment given. Digitalis was given freely in full doses. His pulse was regular January 5, 1921, when he left the hospital.

VII.—ALTERNATION OF THE HEART

This is a condition in which every other ventricular beat varies in strength, producing a similar variation in pulse, or an intermittent pulse. It is associated with conditions which produce exhaustion of the heart muscles. It is a deficiency in contraction of the muscles of the ventricle and not a defect in conductivity of impulses from the auricles.

REPORT OF CASES

Case 5.—In examining a patient, Miss K. S., who came to the hospital with a history of arterial hypertension, insomnia, and dyspnea, I applied the cuff to take her blood pressure. Her radial pulse had previously been counted at about 100. In taking her blood pressure, I found that as the sound first appeared at the elbow, I counted only 50 per minute. I immediately felt the other arm and found the pulse there was still rapid. Presently, however, as the pressure was reduced, a second, weaker sound appeared between the first, slower sounds and it recurred regularly. B. P. 200-100. This is an example of alternation of the heart, every alternate beat of the ventricle producing a weak impulse that was not recognized at the wrist, but was detected with the blood pressure apparatus. This patient died two weeks later. Occasionally it is not detected in the arm at all, but can be detected in the chest.

Case 6.—A physician past middle life had for several years been suffering with arterial hypertension. When seen in consultation, I found him sitting up panting for breath, and with considerable œdema of the legs. The blood pressure had been about 180 to 190, but had dropped to 140. The pulse which had been about 88 was about 44. Three possible diagnoses were suggested: He had been taking digitalis in the form of digitalin hypodermically for about a week and the first supposition was digitalis accumulation with heart-block as in Case 1 already mentioned. This was ruled out by finding on auscultation and palpation that the ventricles contracted at 88 per minute, one-half of the impulses not reaching the radial artery. The diagnosis then lay between premature contraction of the ventricles and alternation of the heart. If the former, then the ventricular impulses would show 1 short and then 1 long interval. If the latter, the intervals between the stronger and weaker impulses would be the same. As a matter of fact, the latter was true. The impulses were regular, but every alternate one was weak. This was a case of alternation of the heart. Digitalis of better quality was given and the patient promptly improved.

SUMMARY AND SUGGESTIONS FOR TREATMENT

1. *Sinus Arrythmia*—Found chiefly in children. Disappears on exercise. It calls for no treatment.

2. *Premature Contractions*—Lessen or disappear when the heart is accelerated by emotion, fever, or exercise. Cardiac drugs, as a rule, are not indicated. Multiple premature contractions indicate myocar-

dial insufficiency, call for rest, and careful attention to the gastro-intestinal tract, and to any systemic or focal infections. Bromides are sometimes useful—digitalis when the heart muscle is exhausted.

3. *Paroxysmal Tachycardia*—Rapid rate, absolutely abrupt in onset and absolutely abrupt in termination—not affected by position or exercise—often cut short by pressure on the vagal nerve. Neuropathic cause should be sought for and treated. Digitalis only when heart muscle shows signs of exhaustion.

4. *Auricular Flutter*—Rarely seen. May be suspected when very rapid, regular pulse is suddenly halved. Treatment—practically the same as for fibrillation, viz.: Digitalis.

5. *Auricular Fibrillation*—Absolutely irregular pulse—irregular in rate, in rhythm, and in volume—disordered ventricular action—heart beats usually faster than the pulse. Exercise increases the irregularity. Treatment: Digitalis or one of its substitutes. Quinidine sulphate has been used successfully by several clinicians. Atropine, Belladonna and Hyoseyamus are to be avoided—they increase the pulse rate.

6. *Heart-Block*—Most often seen with pulse rate of 50 or less. Sudden drop while taking digitalis or during convalescence from acute diseases are suggestive signs. Rate effected but little by exercise—extreme cases produce unconsciousness and convulsions (Stokes-Adams syndrome). Treatment: No treatment is needed, as a rule. Digitalis *not* to be used. Epinephrin or atropine should be given in severe cases.

7. *Alternation of the Heart*—Easily recognized by the use of blood pressure apparatus or in cases of halved pulse, by comparing radial pulse with ventricular beat. With hypertension and cardiosclerosis, it indicates serious heart weakness and a fatal issue is not far off. With normal blood pressure, it may be relieved by supportive cardiac drugs such as digitalis.

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DISCUSSION

DR. LEWIS WEBB HILL, Boston, Mass.: I have heard a great many papers on cardiac irregularity in the last few years, among them one by Sir Thomas Lewis, but I have never heard the subject more clearly presented than it has been done by the reader. There is nothing

mysterious about cardiac irregularities. We should diagnose most of them by the stethoscope and by our own fingers. We do not need the electrocardiograph in most of the cases, and that is a thing which the profession should realize. I think it is a great thing that Dr. Munroe has brought out that point, that with the possible exception of auricular flutter and certain cases of heart-block, which are sometimes hard to diagnose except by the most advanced methods, we do not need the instruments of precision.

In children the most common irregularity is sinus arhythmia. Then, again, we get extra systoles, or premature contractions, pretty frequently in children, particularly in the contagious diseases and febrile conditions. The significance of these conditions is the significance of the underlying cause. If the underlying cause is a serious one, then the heart condition is serious.

As regards adults, we get premature contractions very frequently in big hearts that have hypertrophied after high blood pressure, or in old sclerotic hearts.

As to paroxysmal tachycardia, we do not see that condition frequently in children. I saw one case in a boy aged ten. The attacks came on and disappeared suddenly. We had him in the hospital for several days and tried all sorts of things, but nothing did any good, until the attack finally stopped of itself.

Auricular fibrillation is very uncommon in children, in my experience. I have seen perhaps not more than one case, and the reason for that is that children do not have the severe degenerative vascular changes that adults have.

Heart-block, I should think, would be as common in children as in adults, though I have never seen much of it.

I enjoyed the paper very much, and wish to emphasize the point that we ought to be able to pick out these irregularities with the stethoscope and by feeling of the pulse, without any complicated instruments, electric or otherwise.

Dr. E. J. Wood, Wilmington: Dr. Hill has emphasized the vital part in Dr. Munroe's splendid paper—the thing which I have heard Sir Thomas Lewis and Sir James McKenzie stress, that instruments are not needful except in the rarest cases.

The thing most important to us is the distinction between auricular fibrillation and extra systole. The patient is made to hop sixteen times upon each foot, to put up the heart rate. If it is extra systole, it is "washed out;" if it is auricular fibrillation, it is made worse by exercise.

Sir James McKenzie said a thing which impressed me as the wisest thing he said, and that was that as soon as we find a means of precision we should immediately learn how to discard that means of precision. That is saying a good deal, when he himself introduced the McKenzie polygraph. In all his teachings he emphasized the fact that there is nothing obscure or difficult in diagnosing cardiac arhythmia. I have

seen a great many neurotics come in, complaining of the heart irregularity, and the fact that they never have it when walking, or in any exercise, is proof that it is an extra systole.

The thing which I have had impressed upon me very forcibly about the pulsus alternans is that it may be produced by digitalis. McKenzie says that when he looks back over his records—and when he does this he usually looks back over eight or ten thousand of them—he finds that he has never had a patient live over two years after the appearance of pulsus alternans. But there is an artificial pulsus alternans produced by digitalis.

I think we all owe a great deal to Dr. Munroe in helping to make it simple and plain, and doing away with a great part of the fear element.

Dr. L. B. McBrayer, Sanatorium: As an encouragement to the general practitioner, and perhaps to other internal medicine men who have not the instruments of precision that have been referred to, and simply to emphasize what has been said by Dr. Hill and Dr. Wood, I want to repeat something that Dr. Frank Billings, of Chicago, told several of us who were having lunch together one day last November. He spoke of visiting Europe during the war as a representative of the Surgeon General, and of visiting the great heart clinic of Sir Thomas Lewis, where all the men who seemed to have anything wrong with the heart—all the Tommies—were sent for study and diagnosis. He said that although Sir Thomas Lewis has given to medical science this wonderful instrument of precision, he did not have a single thing but his fingers and his stethoscope in his great heart clinic during the war. I just mention that to emphasize the things said by the essayist and the other two speakers. If we look carefully for these things, they can be found without the use of the electrocardiograph and other instruments.

I too, want to congratulate the essayist, and to say that whenever I have heard him read a paper I want to congratulate him and thank him.

Another thing I want to say is that the day of internal medicine is at hand. Ten years ago, if you made a circuit of the sections of the Medical Society of North Carolina, or any other medical society, north or south, you found the crowd with the section on surgery. I made the rounds this morning, and I came in here and found it crowded. I went to the Section on Surgery, and found that it had opened with six present, and that there were about twenty present then. I mention this to show you that we are studying medicine now, in reality, and again I want to thank Dr. Munroe for his paper.

Dr. Louis G. Beall, Black Mountain: I would like to ask Dr. Munroe a question in regard to the administration of digitalis, that is, whether he uses a few large doses or repeated small doses.

Dr. Thomas McCrae, Philadelphia: I would like to discuss one point arising out of Dr. Munroe's paper. He spoke about using digitaline. I wish to emphasize the point that in my personal opinion it is of very little value. I would like to suggest to those who believe in digitaline that if they watch the results carefully, I believe they will find that they get a great deal better results from the tincture of digitalis.

I would like, also, to join in what the previous speakers have said about using our own senses, and to add to that the use of the eyes. The stethoscope and fingers are very valuable, but use the eyes also. Many of these conditions can be diagnosed by the use of our eyes, without needing to use the fingers and stethoscope.

Dr. Munroe, closing the discussion: My friend, Dr. Beall, has asked me if I am a believer in the big doses or the small doses of digitalis. I may answer that by saying that I am a middle-of-the-road man. My associate, Dr. Barron, has been giving teaspoonful doses, and the patient is getting well, but I have never given that much.

I thank Dr. McCrae for emphasizing what I said, that I do not believe digitaline is of much value. Often when we think too much digitalis has been given, we find that we have not been giving enough, and if we stop the digitaline and give digitalis, the patient will get better.

Dr. Wood speaks of a new class of pulsus alternans. I was about to suggest a new class myself, different from what he mentioned, but did not do it because I have seen only one case. About three months ago, a lady aged fifty came in, complaining of discomfort about the heart. Her blood pressure was low and there was no evidence of arterial degeneration, or arteriosclerosis, or of anything serious. She had an alternating heart. I made her take some exercise, and it disappeared. I put her on a general tonic, and have heard nothing more of it.

THE RELATION OF AGE TO DISEASE IN CHILDHOOD

Wingate M. Johnson, M. D., Winston-Salem

The subject of this paper has been in the back of my head for a long time. It has remained so long in the embryonic stage, however, and its growth has been so slow that I fear you will all think that this child of my brain is only a premature labor—if not an incomplete abortion. I am sure, though, that much will be forgiven if its actual delivery be a brief one. It is by no means meant to be an exhaustive study but I trust that it may prove helpful by stimulating others to think upon the same line.

In discussing the subject I want to consider primarily the relation of age to the incidence of disease and secondarily its relation to symptomatology, diagnosis, prognosis and treatment.

1. The New-born Infant. The chief dangers in the path of the new-born infant are asphyxia, cerebral hemorrhage, atelectasis, septic infection through the umbilicus, the peculiar hemorrhagic disease of the new-born, and the so-called inanition fever. Of less danger to life but of dreadful possibility is gonorrheal infection of the eyes. Icterus is a frequent but usually benign infection. Mastitis, abscess of the breast, and even septic infection may follow ill-advised attempts to express the milk which is often found in the breasts of the new-born. Congenital laryngeal stridor is apt to give the parents much concern though really benign. It may persist into the second year.

Congenital syphilis will usually manifest itself within the first two months but a positive Wassermann may not develop until after the sixth week.

Of the acute infectious diseases the respiratory diseases, particularly bronchitis and broncho-pneumonia are the only ones common to the newborn and are responsible for many deaths.

2. The relative immunity to the acute infectious diseases which the mother's milk seems to bestow begins to wear off after the first six months and from the second year to puberty is the period of greatest susceptibility to childhood's peculiar diseases. The Schick test demonstrates this in the case of diphtheria—showing that nearly all children under six months are immune, that the period of greatest susceptibility is from 6 months to 6 years, and that after 6 years the percentage of immunes rapidly increases. This immunity does not apply to the respiratory diseases.

3. Tuberculosis is rarely evident within the first six months but is most apt to develop within the first five years, the second year being the period of greatest liability. While the child is rarely born infected with tuberculosis he is very susceptible from birth to contact infection and in the early years of life it is peculiarly fatal. It is most apt to be generalized though predominating in some part of the body. The lesson to be drawn from this cannot be over-emphasized—viz., the criminality of exposing an infant to any one even suspected of having the disease.

4. The Nutritional Diseases—scurvy, rickets and its associate tetany—develop between 6 and 18 months. Rheumatism, on the other hand, is practically unknown under three years. Remembering this fact should prevent the mistake sometimes made of diagnosing scurvy as rheumatism.

5. The Digestive System. As long as the baby is breast-fed exclusively and sufficiently, aside from such minor ailments as thrush and colic there are only two troubles of this system to be really feared. These are hypertrophic pyloric stenosis, which is to be looked for between two weeks and two months, and intussusception, which may occur at any age but is most apt to come within the first two years, particularly between four and nine months. After breast milk is replaced by other foods, however, the danger increases in inverse proportion to the care with which the food is selected and prepared. The susceptibility of the young child to intestinal infection is too well-

known to require more than mention, but in passing I would like to say that in my opinion the practice now happily becoming widespread of boiling all cow's milk used in artificial feeding has done more than anything else to prevent the diarrheal diseases of infancy. In my own experience I can count upon the fingers of one hand the cases of dysentery I have seen in children fed on boiled milk.

Tonsilitis may occur early though not frequent under six months. A point of practical importance is that children even up to six or eight years as a rule have very little pain with it. The wisdom of examining the throat as a routine procedure is too well known to require emphasis. Peritonsillar abscess is rare in early life while retropharyngeal abscess occurs in the first two years only and may easily be confused with laryngeal diphtheria.

6. Respiratory System. Throughout the first two years of life the respiratory system is peculiarly susceptible to invasion and its diseases have a high mortality. I need hardly remind you that the large size of the bronchi and the thinness of the chest walls give a respiratory murmur normally differing from the adult type in being harsher and more nearly bronchial.

Congenital laryngeal stridor, already mentioned, begins at or very soon after birth. In differentiating the other affections of the larynx from laryngeal diphtheria the age-incidence is of little help as they may all occur at the same age—after six months.

Bronchitis and broncho-pneumonia, as previously stated, are very frequent throughout infancy and childhood. Lobar pneumonia is rare in the first year but common thereafter. Empyema is much more frequent in early childhood and has a much higher mortality—74% for the first year and 59% for the second against 13% for older children. Serous effusion is comparatively rare in childhood.

It is of some importance to remember that asthma may begin in early childhood. According to Still the great majority of all cases begin within the second and third years.

7. Otitis Media is so frequent in infancy and its complications may be so formidable as to require special mention. It is usually secondary to some upper respiratory infection and may result in mastoiditis, permanent deafness, sinus thrombosis and septicemia.

8. Circulatory System. The heart is relatively large in childhood. Its position in the chest is nearly horizontal with the apex beat outside the nipple line in the fourth interspace. From the fourth to the ninth year it gradually moves downward to its adult location.

Excluding congenital heart lesions the heart is rarely diseased under three years. Accidental murmurs occur in nearly 50% of all children according to Hamill and others but true endocarditis is almost unknown under three years. Only one case occurred under this age in more than 2,000 autopsies at the Babies' Hospital. The age-incidence of endocarditis is the same as its great cause, rheumatism—from three or four years up. A peculiarity of rheumatism as it affects children is its great liability to attack the valves of the heart in con-

trast with the slight joint manifestations. The "growing pains" of childhood should never be dismissed lightly as they may be really rheumatic and cripple the heart for life. Fortunately pericarditis is much less common in childhood. It, too, is rheumatic in origin usually and has the same age incidence.

9. Kidneys. Acute nephritis as a primary affection is rare in childhood. It is usually secondary to some infection, notably scarlet fever, frequently ordinary tonsilitis. During our recent epidemic of "near" influenza I was interested to note that practically every urine examined within several days after the attack showed albumin and casts. Still more interesting was the fact that they all cleared up promptly with no special treatment.

There is no special age limit for nephritis other than that of the infections to which it is usually secondary. The prognosis is better than in an adult. Chronic nephritis is rare under five years and had an unfavorable prognosis.

Pyelitis may occur at any age but is far more frequent under two years. It may cause alarming symptoms though the prognosis is usually good with proper treatment. I need hardly remind you that it rarely ever occurs in boys. After the second year both the frequency and severity of the cases diminish.

9. Nervous System. Perhaps the greatest difference between an infant and an adult is the enormous disproportion between the infant's central nervous system and the rest of his body. A crude comparison is that of a dynamo capable of running a printing-press attached to a sewing machine. So much electrical energy would be hard to control with so small an outlet. Similarly the relatively large dynamo of nervous energy pent up in the infant's tiny body is hard to control. The child is in a state of "nervous instability," to use a favorite expression of Dr. Still's. His breathing is irregular; the pulse is frequently so particularly during digestion when the vagus nerve supplying both the heart and digestive organs gets its messages short-circuited. A child's heat-regulating center is more unstable and responds to infection or disturbances of metabolism with a temperature far higher than would be produced by a similar condition in an adult. Likewise the demand for a rapid dissipation of nervous energy which is met with in the adult by a chill may in a child cause a convulsion.

The lesion of the brain most to be feared in the newborn is, of course, cerebral hemorrhage from birth pressure and which if not immediately fatal is apt to blight the individual through life. To our own Dr. Sidbury is due much credit for pointing the way to relieving many of these cases by early and, if necessary, repeated lumbar puncture.

Idiocy, except of the Mongolian type, can rarely be recognized before the end of the first or the first half of the second year. The peculiar features of the Mongol may make its recognition possible within the first few weeks. Cretinism may begin to show its characteristics during the latter half of the first year. Its early recog-

nition is, of course, important, but I think you will all agree with me that it is usually best to wait for the parents themselves to make the diagnosis of the other varieties of mental defectiveness.

Epilepsy is most apt to begin at puberty or during the first three years of life when there is special activity of physiological development. The older the child at onset the less the danger of mental deterioration.

Tetany is regarded as a manifestation of rickets with the same age-incidence, 6 to 18 months.

Chorea is generally regarded as a manifestation of rheumatism and has the same age-incidence—four years and older.

Hysteria is rare before the tenth year.

Cerebral abscess is rare under ten years. Tumor of the brain is more common and is possible at any age.

Acute poliomyelitis is most usual during the second year. 80% of the cases occur within the first four years.

10. Blood. Except in the first few days of life the hemoglobin is relatively low in childhood, 65% to 85%. The adult level is reached at 16 years. The red cells are correspondingly reduced in number. The white cells are increased. The normal variations in infancy are 9,000 to 18,000; in later childhood, 8 to 12,000. The lymphocytes are greatly increased, varying normally from 50% to 70%.

Secondary anemia is very frequent throughout childhood. Prolonged nursing or exclusive milk feeding is a frequent cause after the tenth month. Improper feeding may cause it at any time. Acute infections, intestinal parasites, syphilis, and hemorrhage are all potent causes.

Primary anemias are much more rare than secondary.

Von Jacksch's anemia is to be looked for between 7 and 12 months.

Acute lymphatic leukemia is perhaps the form most frequently met, and frequently shows a leukopenia rather than a leukocytosis, but with a lymphocyte count above 90%.

Pernicious anemia is very rare in childhood.

Chlorosis is, of course, to be looked for in girls at puberty.

Purpura is to be looked for after the second year—a differential point from scurvy.

True hemophilia is rarely seen before the third year and bears no relation to the hemorrhage of the newborn.

In infancy and early childhood there is an increased susceptibility to septicemia. In its treatment brilliant results have recently been obtained by repeated transfusions of whole blood immediately after the withdrawal of a corresponding amount of the patient's blood. Dr. R. E. Stetson, of New York, who was the co-laborer and is now the successor of Dr. Edward Lindeman, is doing a great deal of work along this line. He told me not long ago that septicemia is the most satisfactory grave condition he had to treat.

11. Diseases of the Lymph Nodes. In infancy and early childhood the lymphoid tissue is in excess and is prone to give trouble. The tonsils and adenoids serve as portals of entry for infection which

may secondarily affect the ear, the cervical lymph glands and may even poison the whole system with a general septicemia.

Simple acute adenitis is very frequent in infancy particularly from 6 months to 2 years. It is usually secondary to tonsilitis, rhinopharyngitis or other acute infection. Tubercular adenitis, on the other hand, is most apt to occur in later childhood, from three to eight years.

Hodgkin's disease is practically unknown under three years.

12. Bones and Joints. Rheumatism is not found under three years. The acute arthritis and acute osteomyelitis of infants is an evidence of pyemia and is usually seen in the first year. Tuberculosis of the bones and joints, on the other hand, is found between three and eight years.

In conclusion, may I remind you that in most diseases of infancy and childhood the determining factor is most often the ability of the little patient to assimilate enough nourishment to tide him over, and that any medication which tends to upset his digestion is likely to do more harm than good. I know of no better advice to leave with you than that given my class at Jefferson by Dr. H. A. Hare at our last clinic—"For God's sake let the patient get well!"

DISCUSSION

Dr. A. S. Root, Raleigh: I want to compliment Dr. Johnson upon that paper. It is a paper which every man who does children's work should read carefully.

There is just one little point he did not mention, and that is in regard to pyelitis. Pyelitis occurring after the first few days of life is practically always found in girls. Pyelitis during the first few days of life is practically always in boys.

Dr. I. W. Faison, Charlotte: I just want to say what Dr. McNairy is probably going to say, and he will probably say it better than I can. I think that the Doctor puts the time for diagnosis a little far off. I think if you stay on and have them in charge you ought to be able to decide that the endocrine gland is not doing its work at the end of the second month, and sometimes sooner than that. The reason you do not see it sooner is that the child is getting some relief from the mother's blood. If you let them go until they are nine months old, the prognosis is bad.

Dr. R. McBrayer, Sanatorium: I rise to emphasize what the essayist said about tuberculosis in children, and the exposure of children to tuberculosis. We were thinking just a few years ago, and are still thinking, that the way to prevent tuberculosis is to keep the children well, to keep their resistance up and they will not break down. The better thing to do is exactly as Dr. Johnson said—and I rise only to emphasize it—that is, do not expose babies and children to machine gun bullets.

Dr. J. LaB. Ward, Asheville: I want to thank Dr. Johnson for this most interesting paper, and I would like to make one or two comments.

In the first place, I want to protest against the practice, which is far too common, of the physicians' treating an infant because it has fever. Rising temperature in an infant, particularly an infant of only two or three weeks, is a challenge to us. The Doctor spoke of sepsis and of the so-called inanition fever. These are perhaps the two commonest causes of fever in a child only a few weeks of age. If the condition comes from starvation, we can give the child one or two feedings, and the temperature will drop.

Another cause is malaria. Malaria is extremely common in infants. Occasionally it is congenital. I have seen malaria in an infant as young as one week—a very severe type of malaria. It would be wise for us to remember malaria and have the blood examined for malaria if we can rule out sepsis and inanition.

A chill in infancy almost always means pyelitis. An infant does not have a chill with malaria.

Now about Wassermanns. A negative Wassermann in an infant means very little. I put much more stress upon examination of the blood of the mother and father than upon examination of the blood of the infant.

Question: What about bovine infection through milk, in tuberculosis of children? The United States Government has had so much to say about children's getting the tubercle bacillus in cows' milk.

Dr. Johnson, closing the discussion: As to bovine tuberculosis in children, I think it is regarded as being comparatively rare, considering the chances for infection. There are far more chances for a child to get it from an adult.

As to the early diagnosis of idiocy, I confess that I have never been able to diagnose a case under a year. Dr. Still, who is a very good authority, says that it can not be recognized under seven or eight months. Cretinism should be diagnosed early, on account of the possibility of treatment. In the other forms I think it is better to let the parents realize it gradually.

Question: How are you going to prevent exposure to tuberculosis when the mother has tuberculosis?

Dr. Johnson: I think the thing to do is to separate the child from the mother.

THE CARE OF THE SICK CHILD'S ALIMENTARY TRACT

Dr. L. W. Elias, Asheville

When a doctor is called to see a sick baby, especially when it has fever and rather indefinite symptoms, the first thing usually to do is to clear out the intestinal tract with whatever his favorite purgative may be. Then he puts it on a starvation diet of some sort.

There are only three points I want to make. The first is that we, as doctors, are not treating patients physiologically when we do that. We treat the alimentary tract as an excretory instead of an absorptive organ. We should brush up on our physiology a little bit and treat them physiologically. Let us consider the alimentary tract for a moment and see what goes on. The object of the alimentary tract is to simplify the food and allow its absorption into the body. What is digested goes into the tissues. For all practical purposes, anything absorbed from the alimentary tract into the body tissues never returns to the alimentary tract. What is eliminated from it is what has never gone into the body tissues. The waste of the food that is not absorbed, the mucus, water, etc., make up the feces. The alimentary tract, then, is an absorptive organ and not an excretory organ. What does excrete the waste products and germ products of the body? Why, the kidneys, skin and lungs, largely the kidneys. Water and carbon dioxide go out through the lungs and skin, but the waste products of the body, the germ products in the body, the toxins, are eliminated through the kidneys mainly. The logical thing, in the face of a condition of that sort, is to eliminate, or try to eliminate, through the kidneys, as nature intends to do, and not through the alimentary tract. Suppose you go to a child who has tonsilitis or a cold or ear trouble or something of that sort. Unfortunately the first thought often is to clear out the intestinal tract, as if there were some inseparable trouble there. The only excuse for a purgative is to keep from adding further trouble.

In the small intestine fermentation takes place, and practically no absorption of toxins. The putrefaction takes place in the large intestine, and absorption of toxins takes place there. We can get at that with an enema, and do not need to use a laxative. You do two things when you do it with the enema, you prevent the further absorption of toxins, and you put water back into the system instead of taking it out. The more diluted the toxins are in the kidney, the less damage the toxins will do. If you want to eliminate the toxins, eliminate them in as dilute a form as possible. If you give a laxative you take water out of the system. You eliminate the toxins in the intestinal tract, but have left the kidneys in poor condition to throw them out, and the urine is more concentrated. We have learned the folly of giving laxatives in case of surgical conditions, such as appendicitis, intussusception, etc. We do not think that is good form. The drift of the discussions today seems to be back to internal medicine and more physiological treatment of our patients.

If you have any infection, if you have a patient with a temperature, the thing to do is to watch the patient and not feel that the first cathartic which the mother gave, and which you supplemented, has not thoroughly cleared out the intestinal tract and that you would better give another course of calomel or oil. The thing to do is to give plenty of water. If you must clear out the intestinal tract, give an enema.

Make your diagnosis before you give a cathartic. The most important thing in treating a sick child is to know when not to give a cathartic. Do not ever give a cathartic unless you know in what con-

dition the patient is, and preferably not when the patient is running a temperature and toxins are being generated. It is not physiological and not fair to the baby to give purgatives to cure colds, etc.

There was a time when, if called to treat a case of typhoid fever, we starved it. Our ancestors went further, and did not even give water. Not so long ago we starved a child with colitis. We practically starved it with barley water. We do not starve our babies now when they have colitis. We feed them now, and not only feed them, but give them water, which prevents acidosis. The tuberculosis men have taught us a good deal about treating sick people. Just because the little youngster has a fever is no reason for starving him to death. A sick child can not live upon air. It needs more food than a well child. The indication for not giving food is the behavior of the alimentary tract, and not the mere fact that the child has a fever or is sick. If our way of feeding children in the past—and sometimes in the present—were followed out in tuberculosis, it would be about as foolish. The thing to do is to feed the patient and not purge him to death. In any sort of infection, tuberculosis, childbed fever, colitis, any of those diseases, the patients are better off with food.

In the care of the alimentary tract in a sick child, make these three points: First, remember that the alimentary tract is an absorptive organ, and do not try to eliminate through it. Second, remember that the kidneys eliminate, and give water. Get water in any way you can. Then, third, if you want to support the child in his fight against infection, give him food, regardless of fever or anything else except the behavior of the alimentary tract.

DISCUSSION

Dr. Cyrus Thompson, Jacksonville: Although I am not a pediatrician but only a general practitioner, I enjoyed Dr. Elias's paper. I do not entirely agree with him, however. If the alimentary tract is not a sewer, it may yet through digestive fault or failure contain substantial sewage, which if absorbed will certainly be deleterious. So Dame Nature wisely sets up some diarrheas as a healthy process.

I do not believe in over-purging; but I have seen sick children, who, I am sure, would have died if I had not cleared out the alimentary tract and then endeavored by lessened feeding to keep it clean. I recall one in its second summer years ago, with bowels and digestion greatly disturbed, the child lying there in toxæmic stupor. I directed the giving of one-fifth grain of calomel every hour for five or six hours, to be followed by oil. The mother said, "Doctor, don't you think it is too weak to take calomel?" I replied, "I do not know, Mrs. Parker, as to that: I only know it is too weak not to take it." The child was better and out of its stupor next day, and he is a fine young fellow now, whose fancy in the spring time "lightly turns to thoughts of love."

I did not feed the child much—no more than he could digest and assimilate. I am not strong on feeding acutely sick people. If I had a case of typhoid running several weeks, or some chronic ailment, I

should feed all the patient could take care of; but if I had a case of acute disorder that would end in a week, I would not bother about feeding.

When I heard Dr. Elias's paper, I was astonished at human tolerance—at the excellence of man and the difference of man from all other animals. There is not one of us but knows that a sick horse goes off his feed. So does your cow. So does your dog, eating grass and emptying his stomach. All sick animals quit eating—all but man. And when animals get back on their feed, their disorder is ended and their health is returned. I have been told that some Boston doctor once said, "that man was the only animal that the great and good God created that was *damn-fool* enough to keep on eating when he got sick." But, as you know, I am only a general practitioner and not a pediatrician; and, as the man in the show said, when under permission to kiss the fair lady's hand, he kissed her luscious shoulder, "I may be wrong."

Dr. L. D. Bryan, Sneads Ferry: One other point was not brought out in this discussion that I think we ought always to remember before we decide whether to give a purgative. We should study the condition of our patient's alimentary tract—whether its upper portion is filled with food, neither digested nor digestible. We should, of course, in getting the history, find out what the patient has eaten, for many a sick child is overloaded with improper food, of which we should hastily rid him. I am practicing as a neighbor to my good friend, Dr. Thompson over there, in Onslow County, and I also do general country practice. We come up with this kind of case so often in the country that I guess that is why we get in the habit of giving a purgative to almost every patient. We find that our patients, especially children, are very improperly fed, and very often we find that a child has had collards or cabbage or beans or something which a child of that age should not have; and often adults have had something which is lying in the upper intestinal tract and needs moving. Whether or not an enema will remove it is questionable. I do not believe that an enema will remove this kind of offending material as quickly as it should be done, especially in cases of high fever, or toxemia.

I thank Dr. Elias for calling our attention to the abuse of purgatives. I know that his paper is timely, and should cause us to always ask ourselves the question, "Is a purgative needed?" before we administer one.

Dr. A. McR. Crouch, Wilmington: It has been a pleasure to hear Dr. Elias's talk upon the care of the alimentary tract during illness. It is a very important subject, and this is a timely place to discuss it. I think, however, that there is a possibility of Dr. Elias's leaving a false impression by his dogmatic statement in regard to letting the purgatives absolutely alone. I think the purgative has its place just as much as arsphenamin or diphtheria antitoxin.

In dealing with children we find two conditions which stand out prominently among all others in the practice of pediatrics. These

two are infections of the nose and throat (colds), and gastro-intestinal disturbances. In colds there is an enormous amount of mucus secreted by the inflamed glands which is swallowed. It creates disturbances in the alimentary canal, and I think nothing will aid the patient more than to give laxatives to keep the mucus passing on. I do not believe in continually purging an infant. I believe the bowels should be early and completely evacuated, and in giving a daily laxative, if necessary, in colds and bronchitis. In gastro-intestinal disease, many of the cases that we see are evidently not bacterial in origin. They are due to careless feeding, the feeding of an improper diet. This disturbs and irritates the gastro-intestinal tract and sometimes immediately throws the child into convulsions, before the disturbing food reaches the large intestine, where an enema will reach it. An enema will stimulate the intestine and encourage the evacuation, but I do not think that purgatives and laxatives should be disregarded in the treatment of children. However, they should be used with caution, and under careful supervision.

Dr. E. F. Strickland, Bethania: Relative to the subject under discussion, I would like to report a case that I have recently had under my care.

Last September a child seven years old, a girl, was brought to my office by her mother, who applied for "something to heal the sores on the child's feet and limbs." The child had a number of the sores that most frequently come in the fall, and that we call impetigo contagiosa. The child seemed well, and was playing around. I prescribed for her and the mother took her home. That night I was called to see her, and found she had a chill and had developed temperature of four degrees. Suffice it to say that the child continued to have fever for four months, with all of the symptoms of infection, of septicemia. She had the sweats, she had the chill, the pains, the aches, and the fever, intermitting but everlasting. She had discolored splotches appearing at intervals over the body and limbs over this long period of time. In consultation with the best counsel I could command, after the child had been sick some two months, perhaps, we considered the idea of transfusion. It was advocated by the consultant—not very strongly, but mentioned and rather urged. The child was doing well, but we knew that we had a fight on for life—although no complication had developed—so we thought it best perhaps to battle it out. I had had correspondence with some of the leading institutions and physicians of the country, and while some advocated transfusion, it seemed to me that it was not the soundest practice, and as strong minds opposed it as recommended it. I battled on with the little sufferer through four months, and she is today strong, healthy, and a promising child, and a great gratification to the parents and everybody else, including the doctors. I think the thing that brought her through was sticking to her, feeding her, keeping the bowels acting well, giving an abundance of water, which is the greatest diuretic of all. This case ran for four months, with an interrupted but continuous fever, from below normal to six degrees above. Elimi-

natives and nutrition, relative to the care of the alimentary tract, were the routine of practice throughout the long attack, and proved their value.

Dr. J. P. Munroe, Charlotte: It occurs to me as probable, in the discussion of this paper, that we may lose sight of one of the most valuable features. Dr. Elias has brought out a point which I think is exceedingly valuable, and which I had never thought of before. He has called attention to the fact—which looks reasonable to me, which looks to be sound theory, and from his experience it is a practical thing to consider—that if you diminish the quantity of fluid in the body you thereby concentrate the urine and put a heavier load on the kidneys. We should not lose sight of the fact that he has brought out a new and very important point.

Dr. R. McBrayer, Sanatorium: One thing that Dr. Elias has mentioned I would like to emphasize. Dr. Elias said, as just now mentioned by Dr. Munroe, "Spare the kidneys." When we men get to thinking that apoplexy and arteriosclerosis are preventable diseases, it will be when, in children, we begin to stop repeated insults to the kidneys and to the arteries.

Dr. Elias, closing the discussion: I tried to state that catharties might be useful, and are useful, but the point I was trying to make was that we use them entirely too much, simply because we are in the habit of giving them.

One of the men discussing the paper said that in cold so much mucus is swallowed that we need an initial purge to get rid of the mucus, but in the initial stage of a cold there is not much mucus.

Our grandfathers saw cases cured by bleeding—there is no doubt of that. We can do lots of things that are useful, but not so useful as some others. I remember a professor at Columbia, who said, in discussing whether or not alcohol is a food, "Yes, it is a food, all right, and you can get steam out of sulphuric acid, but it is hard on the boiler." Now, if you can not get a bowel movement with an enema, you can give a laxative, but do be easy with it. Dr. Griffith said in his last book that in cases of nephritis we may give a laxative, but be sure the urine is not concentrated. When he writes his next book he may say not use a laxative and use water instead. Laxatives may be useful in some conditions, but I have so often seen doctors purge patients and do it over again, and I have seen a few cases in doctors' families carried to the point of prostration because of excessive purging. We must remember these physiological points. Get down your physiologies and study up a little bit. We have gotten into a habit, just as our grandfathers got into the habit of bleeding, and now we go and purge them. If you can do the same thing with an enema, why not spare the kidneys and spare the patient? There are just about two classes of drugs that we give anyway, purgatives and sedatives, causing constipation and causing drug habits. Let's go back to a physiological basis. This applies especially to babies.

EFFECTS OF PYELOGRAPHY SOLUTIONS ON RENAL FUNCTION. WITH SPECIAL REFERENCE TO SODIUM BROMIDE. A FUNCTIONAL AND PATHOLOGICAL STUDY. PRELIMINARY REPORT

L. C. Todd, M. D., and Raymond Thompson, M. D.
Charlotte

Almost from the beginning of the use of opaque pyelographic media, the dangers of pyelography have been recognized and frequently discussed. Cases of deaths following the injection of some of the opaque media into the kidney have been reported. Especially is this true of insoluble media such as the various colloidal silver preparations, but this unfortunate sequel is not alone confined to this class, for even some of the soluble preparations have resulted in death after pyelography.

There has been a progressive and rapid evolution in this branch of urologic diagnosis until now we are familiar with the use of non-toxic soluble salts which give a very satisfactory pyelographic shadow. At present, solutions of sodium bromide and sodium iodide are generally adopted as safest and most practical.

The clinical observations which we wish to record herein are based on experience gained during the past three years with the use of sodium bromide as the opaque medium.

Early in the use of this solution there were found certain recent pathological changes in our patients' kidneys which had been injected with the solution for pyelographic purposes. These kidneys had presented other pathological conditions for the treatment of which, nephrectomy had been performed. Grossly, these changes appeared as small, discrete, hemorrhages into the mucous membrane of the kidney pelvis and calyces. Furthermore, it was observed that the color of these punctate hemorrhages varied with the interval elapsing between the injection of the kidney pelvis and the nephrectomy. In a kidney removed two days after pyelography, these hemorrhagic spots were deep red in color but when the interval happened to be six to ten days they were brownish-red and showed a brownish-yellow discoloration of the mucosa between the spots or at their borders.

Microscopically these were seen to be small rents in the epithelium at the site of the spots with a considerable extravasation of blood under the epithelium at these points. Deeper in the mucosa there were numerous small hemorrhages. Along the collecting tubules of the pyramids small extravasations were numerous and occasionally these were found as far peripherally as the capsule itself. Furthermore, the glomeruli and network of capillaries along the collecting tubules showed a definite congestion.

These findings were found to be present so constantly that it was promptly decided that these were the results of the injection of the kidney pelvis due either to the pressure exerted in filling the pelvis

or to the action of the solution itself. An examination of some kidneys removed some time previously when thorium nitrate was in vogue, showed a very similar condition and we came to believe that this action on the mucosa was not characteristic of sodium bromide.

Shortly after these observations were made we were able to make a satisfactory determination of the phthalein excretion of each kidney in one of our patients both before and after the use of sodium bromide in securing a double pyelogram. These determinations were carefully controlled, that is, both ureteral catheters were passed readily and both fit the ureters snugly since the urine came away freely from both and after the interval during which the dye was collected, the bladder washing showed no trace of phthalein. The phthalein excretion of one of the kidneys was reduced after the bromide injection to one-third of what it showed just two days before. The excretion from the other kidney was reduced to a less degree. As other opportunities of this kind presented themselves it was noted that there was occasionally an alteration in the renal function as manifested by a diminished phthalein excretion. On the other hand, other patients showed no decrease whatever in the phthalein output.

The duration of this functional impairment is still problematic but in one of our patients a third determination taken a year and a half later showed that the kidneys' ability to excrete the dye had completely returned. The detailed data in this case are as follows:

REPORT OF CASE

Case No. 1541—Male—Age 44—Merchant.

September 7, 1920, in the course of a routine urological examination a bilateral phthalein excretion was made with the following findings:

Urine Before Injection of Dye	Appearance Time	Amt. of Urine Collected	Dye Excreted in 15 min.	Dye Concentration
Rt. Negative	4 min.	7.5 cc.	13.5%	1 cc.=1.8%
Lt. Few pus cells, an occasional bacillus	5 min.	7.0 cc.	6.25%	1 cc.=0.89%

Bladder washings contained no trace of phthalein at the end of the period. Following this determination a double pyelogram was obtained in which 20% Sodium Bromide was used as the injection fluid. Two days later a second bilateral phthalein test was performed with the following findings:
September 9, 1920.

Urine	Appearance Time	Amt. of Urine Collected	Dye Excreted in 15 min.	Dye Concentration
Rt. Negative	4 min.	7.5 cc.	5%	1 cc.=0.67%
Lt. Negative	4 min.	6.5 cc.	4%	1 cc.=0.61%

Again the bladder washings contained no trace of phthalein at the end of the period. It will be noted there was a distinct reduction in the phthalein excretion from both kidneys most marked on the right side in which the phthalein excretion was reduced to one-third that seen previous to the injection.

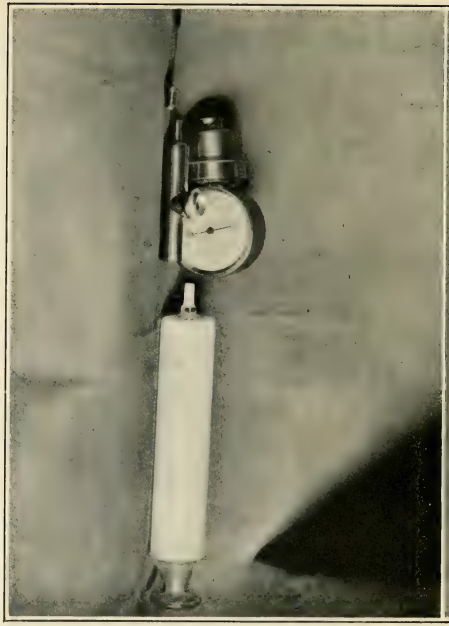


Fig. 1—Pressure guage adapter for measuring pressure in making kidney injections.

Fig. 2—Adapter separated into its parts.

About a year and a half later this patient gave us an opportunity to make a third determination which resulted as follows:
April 4, 1922.

	Urine	Appearance Time	Amt. of Urine Collected	Dye Excreted in 15 min.	Dye Concentration
Rt.	Negative	4 min.	7.5 cc.	17%	1 cc.=2.27%
Lt.	Numerous pus cells, few bacilli.	5 min.	7.0 cc.	6.5%	1 cc.=0.93%

It is seen that the ability of the kidneys to excrete the dye has returned to the point at which it was found before the kidneys had been injected. The duration of functional impairment to a degree as illustrated by this case we do not know but we believe it is relatively short. Other cases have shown a diminution in phthalein output immediately following pyelographic injections with a subsequent return to their normal.

The following case will illustrate the possible influence of pressure upon the human kidneys' ability to excrete phthalein.

REPORT OF CASE

Case No. 6901—Male—Age 48—Farmer.
4/10/22—Phthalein Excretion Test.

	Urine	Appearance Time	Amt. of Urine Collected	Dye Excreted in 15 min.	Dye Concentration
Rt.	Few pus cells	4 min.	10 cc.	12%	1 cc.=1.2%
Lt.	Few pus cells	4½ min.	10 cc.	12%	1 cc.=1.2%

The capacity of the left pelvis was then measured with saline solution at a pressure of 50 mm. and was found to be 17 cc., 15 cc. of 20% Sodium Bromide solution was then injected at a pressure of 50 mm. without the patient suffering any pain. Pyelogram showed some enlargement of kidney pelvis. There was good filling of all parts of pelvis.

4/12/22—Phthalein Excretion Test.

	Urine	Appearance Time	Amt. of Urine Collected	Dye Excreted in 15 min.	Dye Concentration
Rt.	Pus cells numerous	3¾ min.	18 cc.	15%	1 cc.=0.83%
Lt.	An occasional pus cell.	3½ min.	15 cc.	14%	1 cc.=0.93%

4/15/22—The capacity of the right pelvis was then measured with saline at a pressure of 50 mm.—capacity 8 cc. It was then filled with 20% Sodium Bromide at 200-250 mm. using 12 cc. The patient complained of pain in region of right kidney which lasted for 18 hours.

4/17/22—Phthalein Excretion.

	Urine	Appearance Time	Amt. of Urine Collected	Dye Excreted in 15 min.	Dye Concentration
Rt.	Few pus cells	8 min.	15 cc.	8%	1 cc.=0.53%
Lt.	Few pus cells	4 min.	10 cc.	14%	1 cc.=1.4%

It will be noted that after injection of the left kidney with a low pressure there was no decrease in the functional activity of the kidney. After the right kidney had been submitted to an injection pressure of 200-250 mm., there was a decrease of 50% in its functional activity as indicated by the dye excretion. This greater pressure is commonly recorded when an operator, accustomed to doing pyelographic injections whose pressure is not accurately measured suddenly has the pressure gauge introduced with the dial concealed from his view. A subsequent phthalein determination in this case nine days after the right pyelogram shows that the phthalein excretion had returned to normal.

In this case, the same No. 6 ureteral catheters were used throughout; each time they fit well and there was no leakage of phthalein.

It is natural for one to associate the functional impairment just mentioned with the pathological changes found in a kidney recently submitted to an injection. There may be several theories advanced as to what causes these lesions in the structure of the kidney. The hypertonicity of the bromide solution used (15%-20%) might possibly cause damage enough to the smaller blood vessels and capillaries to produce petechial hemorrhages. As an illustration in favor of this, sodium bromide of this strength or even in 10% solution when put into the bladder for radiographic purposes is much more irritating to the patient than physiological saline solution. Also injection of 20% sodium bromide solutions into the kidney pelvis are more painful than injections of saline solution.

But from the fact that these hemorrhages may be found remote from the point of application of the chemical and from the evidence we have thus far obtained experimentally in rabbits, we are inclined to believe that pressure is the outstanding factor in the production of the changes noted.

In experimental animals, we have pathological preparations showing that under ether anaesthesia, when one ureter is injected with 20% sodium bromide slowly and with a minimum of pressure while the other ureter is injected with the same solution under considerable pressure—around 200 mm. Hg.—the first kidney shows a normal structure except congestion of the glomeruli and the capillary network of the pyramids, while the other kidney which was injected with considerable pressure will show breaks in the continuity of the epithelium of the kidney pelvis with sub-epithelial hemorrhages at these points. The collecting tubules are dilated and there are small extravasations of blood along the tubules extending to as distant a point as the cortical labyrinths. Some of the larger collecting tubules themselves are seen to be partially filled with blood. We have not seen any definite degenerative changes in the epithelial cells suggestive of the hypertonic salt action of the solution but possibly these would be manifest if it were not that experimentally the solution was left in contact with the pelvic epithelium for only a brief period of time—15-20 minutes—and then the kidney promptly removed and placed in a fixing solution. If the kidney were left in the animal, as in the human subject, this change might be made manifest and furthermore the pin-point hemorr-

hages, which are much smaller in the experimental case, might develop to a size similar to those seen in the human kidneys several days after injection. Technical difficulties will hardly permit the recovery of the animal.

These findings just described are not characteristic of the hypertonic sodium bromide solution but identical results are obtained when physiological saline solution is used instead of sodium bromide. The kidney submitted to pressure by the injection of a solution into the pelvis is the one showing these acute traumatic lesions.

We have learned that a pressure of about 250 mm. Hg. is sufficient to split the pelvis of the rabbit's kidney and the tear extends up through the kidney substance. Weld has shown in his experimental dogs that when the dog's kidney is injected with colloidal silver at a 250 mm. Hg. there is a sudden release of pressure, the solution leaves the syringe and the animal dies in a few minutes. A radiograph of the excised kidney shows that the silver solution has broken through the kidney substance at the poles and gained entrance to the general circulation causing multiple embolism and death. Multiple embolism has been the cause of occasional deaths of patients reported in the past when colloidal silver was used and we may presume that the mechanism of its production was similar to these experimental cases.

Recently we have been introducing a pressure gauge laterally into our injection system when doing a kidney injection for radiographic or therapeutic purposes. By this means we have been able to measure accurately the amount of pressure which was put upon the syringe and it is truly surprising how little force it takes to register 200-250 mm. on the gauge. Anyone who is accustomed to inject kidneys without measuring his pressure accurately will register a much greater pressure than he realizes. The introduction of this device has permitted us to get away from the guess work of determining the right amount of pressure and to discard the cumbersome burette or other similar methods. We have now a simple condensation of this scheme which makes it as easy for the operator as if he were handling the syringe alone.

By this means we have been able to measure the pressure put on the syringe in injecting pyelographic media or other solutions and have found that with a slow injection lasting about 4-5 minutes at a pressure of 50 mm. Hg., we have been able to get as clear-cut a filling of the kidney pelvis as we have gotten in any other way. Furthermore, if the pelvic capacity is measured with a slow saline injection using the same pressure precautions and stopping at the first sensation that the patient feels in the region of the kidney; then following the withdrawal of the saline with the opaque medium using about 1-2 cc. less than the capacity, the injection can be stopped just short of the distention point and the patient is saved thereby the greater part of the suffering usually incident to a pyelographic examination. It cannot be denied however that pyelographic solutions of concentration enough to give a satisfactory shadow are more irritating to the mucosa of the urologic tract than physiological saline for example.

From the pathological specimens we have obtained at operation and from the evidence we have thus far gained from animal experiment, we believe that injection of solutions into the kidney under considerable pressure is followed by certain traumatic lesions in the kidney. These lesions might become the site for the lodgment of infection and subsequent penetration of the infection into the deeper structures of the kidney. They may possibly serve as nuclei for stone formation.

In some patients submitted to kidney injections there is a striking diminution of the phthalein excretion following this procedure. Apparently, this is only transient unless the pressure is unduly great and actually causes a split of the kidney substance. Satisfactory filling of the kidney pelvis for either therapeutic or radiographic purposes may be obtained by a slow injection at 50 mm. Hg. pressure or less. The patient suffers less pain from the treatment of the kidney and the mechanical damage to the kidney is less if the pressure put on the kidney is less.

A special gauge adapter is presented with which it is as easy for the urologist to inject solutions into the ureteral catheter as if he were using a syringe alone, while at the same time the pressure can always be under his control.

DISCUSSION

Dr. Thompson: I wish to emphasize the importance of the pressure apparatus from a clinical standpoint. We have found since adopting this instrument that the kidney pelvis can be filled more completely under low pressure, thereby giving a clearer pyelogram and at the same time markedly reducing the discomfort to the patient. Without this instrument one invariably uses a great deal more pressure than is necessary.

We would also like to emphasize the importance of the use of a catheter sufficiently large to fit the ureter snugly which should be passed to the pelvis of the kidney in order that no urine or dye may escape into the bladder.

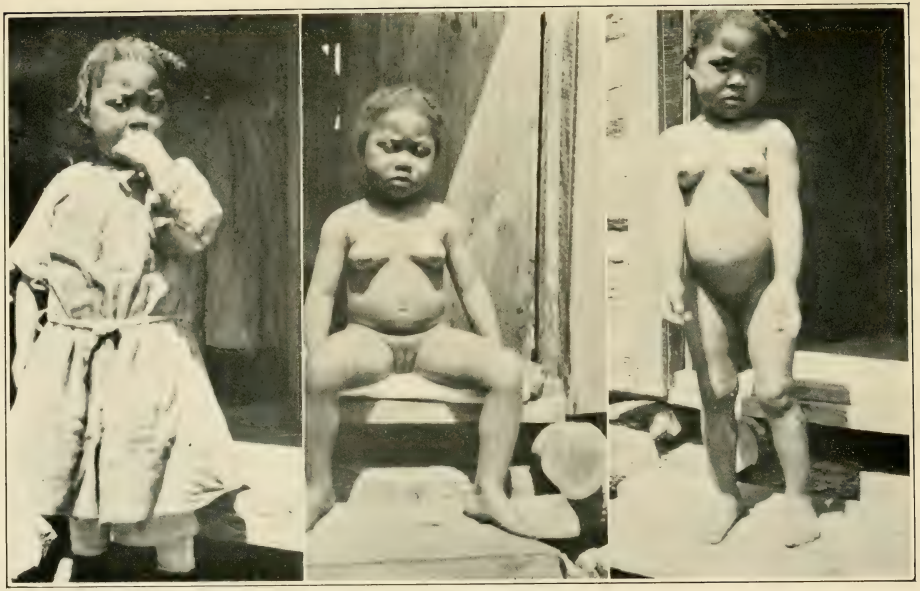
PRECOCIOUS MENSTRUATION AND MATURITY

(With Report of a Case)

G. H. Macon, M. D., Warrenton

A negro girl, age two years and eleven months, was brought to my office in January. The mother of this child said to me that the child was passing blood and my first thought was that possibly there was something wrong with either bladder, ureters or kidneys, not thinking for one moment that I was dealing with something so unusual.

From all outward appearances there was nothing unusual about the child, just a well nourished negro girl, but the mother expressed



PRECOCIOUS MENSTRUATION

it to me in this way, "Doctor, this child is an old woman," and it was a few minutes before I could exactly understand what she really was talking about.

So I proceeded to give the patient an examination. The child's mental state appeared about the average of any negro girl of her age. The breasts were unusually large and developed to the same size of the average adult female. The mother also stated to me that this child was very large at birth, weighing between twelve and thirteen pounds. On further examination I found that this child had pubic and axillary hair and a mons veneris fully developed and to my surprise the child was passing through her first menstrual period, a towel was in place in the usual manner of an adult female passing through this period. On further questioning the mother I found that the development began at the age of twelve months and had gradually developed to the stage of puberty and had reached its final development at the age of two years and eleven months. Since her first menstrual period she has been menstruating every twenty-eight days, and has just finished her third period.

The duration of her periods are three days and she experiences the usual discomforts at this time.

In looking up the literature on this subject, I can find very few cases reported and the etiology of this condition has not been definitely decided upon. Morse reports fifty-one cases, thirty-six of these cases began to menstruate during the first two years. These patients are unusually large at birth, they have large breasts, axillary and pubic hair and a prominent mons veneris, they develop very rapidly and at eight or ten years may present the full maturity of the adult, the menstruation is regular and preceded early in life by various feelings of the usual discomforts.

It is also stated that menstruation in these cases is accompanied by ovulation. Eleven cases are on record where pregnancy has developed in childhood. In looking over some case reports I find where one child began to menstruate at two years old, became pregnant at eight years of age and ceases to flow at twenty-five and lived to be seventy-five years of age without any recurrence of menstruation.

As I have stated, the etiology of this condition is not known, probably this abnormal condition is due to some derangement of the ductless glands, this has not been proven conclusively, there are, however, instances where the abnormal development has been arrested by the removal of cystic tumors of the ovary.

DISCUSSION

Dr. Harrison, Chairman: This is certainly a most unusual case, and I hope that we can have an interesting discussion of it.

Dr. A. McR. Crouch, Wilmington: This paper is very interesting. I have never seen a case of precocious menstruation, but I had occasion once to be confronted with a uterine hemorrhage, which offered

an opportunity to make a differential diagnosis. The case I refer to was eight months of age. An examination showed that it was sarcoma of the uterus.

Cases of precocious menstruation are very rare, but whenever we have them, they become important to us from several standpoints, the most important is in protecting their future. In a great majority the generative organs develop along with the menstrual period, and preventing conception is the problem the general practitioner has to deal with. There are records of these precocious menstrual cases having given birth to babies at the age of six years. A German scientist has made a special study of precocious menstruation, and he has found recorded in all literature 150 cases. Therefore it is not an extremely important subject, except occasionally. There are three types of these cases: One type in which there is the monthly menstrual period associated with apparently normal development of the generative organs, mammary glands, pubic hair, and development of the body accordingly. There is another type in which there are some manifestations of development, but associated with tumors of the suprerenal body or some other ductless gland. Then there is a type in which you have nothing except the menstrual flow. The menstrual periods, so far as I have been able to find out, occur regularly up to a certain age, then they become irregular and may cease altogether at a very early age, though they may continue normal. There is on record a case which began to menstruate at the age of two years and continued to menstruate until the age of fifty-two. Now, one lesson which this condition seems to bring, and which is greatly needed, is that it shows the possibilities of endocrinology. It is thought that these premature menstrual functions are due to an over-stimulation of the glands of internal secretion. That has been well demonstrated by the fact that often associated with this is disorder of the pituitary or other glands of internal secretion.

In discussing this, another point comes up. Some one makes the statement that in normal individuals, where there is an early puberty there is an early closure of the epiphyses, whereas in those which have a late puberty there is a late closure of the epiphyses. Those that have a premature or very early menstrual onset remain short, and those that have a delayed puberty grow long in stature. That, it seems to me, shows that there is a wonderful field for study of the glands.

Now, in making a diagnosis, we must consider two other things which do occur. One is the uterine hemorrhage, of which I have already spoken. That does not recur, and there is no associated premature development of the other organs of the body. Another thing which requires a differential diagnosis is the deposit of urates from the urine. It may confuse the mother, and unless the physician is very careful she may convince him that the child is menstruating.

As to treatment, there is none, except to prevent these cases from becoming pregnant.

THE MILK REGIMEN IN INTESTINAL INTOXICATION

W. T. Rainey, M. D.
Highsmith Hospital, Fayetteville

During his rounds the physician is frequently consulted by individuals with sallow, dirty complexion, inelastic skin, coated tongue, foul-smelling breath, constant abdominal discomfort of one kind and another, doughy inelastic abdomen, cold extremities and physical and mental depression. Frequently they have been the rounds with but temporary relief and are more often of the feminine class. They belong to the class of "pill-takers" and will tell you this is the only way they get relief. They are subject to so-called "bilious" attacks and have to take calomel or other measures frequently, after which they feel fairly comfortable for a time only to return to their former state. The stools are infrequent, of dark color and very offensive. Their appetite is poor and after eating they feel distended and uncomfortable. They have frequent headaches oftimes associated with nausea and vomiting which are relieved by purgation. They always have a bad taste and are anemic and under weight.

The purpose of this paper is to discuss the application of the milk regimen in such cases.

The milk cure in one form or another has been practiced from the earliest times. It was known to the early Greeks and was recommended by Hippocrates several centuries before the Christian era. Galen made use of cow's milk and of the milk of the goat and sheep. He very highly commended milk as a remedy for various diseases and refined the method by requiring that the cow producing the milk should be fed upon certain special herbs.

In modern times the use of milk as an exclusive diet was brought to the attention of the profession by Philip Karell, of St. Petersburg, physician to the Czar of Russia. He was perhaps the first to systematize the use of milk and to insist upon its use in small doses. He made use of the remedy especially in the treatment of obesity and dropsy though he commended it as a valuable remedy in many other chronic diseases. He employed small quantities, generally not exceeding three or four pints daily, the object being to reduce flesh or to promote the absorption of dropsical fluids. He did, however, recognize the fact that it was somehow through its influence upon the alimentary canal that the beneficial effects of milk were impressed upon the body.

More recently Kellogg and his associates at Battle Creek have made an exhaustive study of the intestinal flora before, during and after the milk regimen.

It is highly important that the patient before beginning a regimen should be subjected to a thoroughgoing physical examination. In addition to the usual history taking and subjective examination in which

symptoms, predispositions, etc., are carefully noted, a special investigation should be made of the patient's eliminative processes, the condition of the skin as regards color and texture should be observed, and in addition to the ordinary quantitative and qualitative examination of the urine the renal efficiency should be tested and when possible a determination should be made of the amount of non-protein nitrogen, uric acid, urea, creatinin and sugar in the blood. It must be borne in mind that the amount of indican in the urine is not a correct indicator of the amount absorbed from the intestines.

When indicated a gastric test meal should be given and an X-ray examination of the alimentary canal by means of the barium meal should be made.

The motility of the alimentary tract should be determined by means of carmine, note being made not only of the time of the appearance of the color in the stools but also of the time of its disappearance and reappearance if such be the case. Occasionally it reappears due to incompetency of the ileo-cecal valve.

The blood pressure and weight of the patient should be determined.

The teeth should be examined by a competent dentist and X-rayed if possible and search made for any other focus of infection the same being removed if found. If, during the examination a chronic disease of the appendix is found, it should be removed and advantage taken of the stay in bed following the operation to begin the treatment which should be carried through to completion. In a majority of the cases of chronic appendicitis the neglect in the care of the patient following removal of the appendix accounts for many of the failures. The operation, while an important part of the treatment, is not all of it. There is a stasis especially in the cecum in these cases to which Rehfuss has very aptly given the name of "pseudo-appendicitis."

The stools should be examined especially with reference to the color, contents, odor and reaction. When possible a bacteriological examination should be made and the percentage of protective and pernicious flora determined.

Cases are indeed very rare in which the milk regimen cannot be employed with success, even though the patient's former experience may have been such as to justify the expectation of failure. Almost the only cases in which the milk regimen is positively contra-indicated are those in which the individual has been sensitized to milk protein and cases of diabetes.

To achieve the best results it is a good plan to place the patient under preliminary treatment for a few days before beginning the milk regimen, during which time special efforts should be made to get the patient's bowels operating freely. This may be accomplished by the use of preparations of bran or agar-agar together with some form of petroleum. Special attention should be directed to the diet as is ordinarily done to correct constipation—if necessary a high enema of soda water which reaches the entire length of the colon may be used followed in thirty minutes with a soap suds enema. It is very necessary that constipation be overcome as otherwise the milk will encourage putrefaction rather than combat it.

The amount of milk taken daily must depend upon the capacity of the patient. It is necessary that nearly double the amount needed for nourishment must be used so that the remainder may be carried into the colon where the sugar ferments producing lactic acid thus preventing the growth of putrefactive bacteria and the soft undigested curds may aid in stimulating peristalsis. The ratio to the body weight is one and one-half ounces of milk to each pound of body weight which is given every half hour from 7:00 A. M. to 7:30 P. M. or twenty-five feedings in all. For the first two days it should be given hourly and the third day every forty minutes. At 8:00 A. M., 1:00 and 6:00 P. M., fruit, bran and paraffin should be substituted for the milk to keep the bowels moving freely. At the same time some form of greens can be given to supply the deficiency of iron in the diet.

Some people experience more or less difficulty in taking milk, especially at first. Many of them will object when the milk regimen is proposed, saying they cannot take milk, as it disagrees with them. It is necessary to question the patient closely to ascertain the cause of the disagreement so as to assure him that each obstacle presented may be certainly and completely overcome. A few of the objections raised with the method of overcoming them follows:

The dislike for the taste of milk can usually be overcome by adding some flavoring substance and explaining to the patient the benefits to be derived from its use when they will agree to try it which is usually sufficient. When possible the milk should be served by another person as the frequent feedings together with the preparation of them may increase a dislike. Frequent rinsing of the mouth with cinnamon water will overcome the bad taste so often complained of.

Occasionally nausea and vomiting are encountered. This is usually the result of taking the milk too rapidly or taking too small a quantity. It should be taken slowly through a drinking tube and warm. When the quantity is too small the milk is not sufficient to neutralize the acid in the gastric juice so that tough curds form which act as foreign bodies producing the nausea and vomiting. By taking sufficient milk to neutralize the acid the resultant curds are soft and flocculent and pass rapidly through the pylorus. If hyperchlorhydria is present the addition of sodium bicarbonate gr. X to each glass for a few days will prevent the formation of tough curds. Pain in the epigastrium is often associated with the nausea and vomiting and is due to the same cause and may be corrected by the same measures.

Constipation and abdominal distension are the most frequent things complained of and unless relieved may cause the patient to discontinue the taking of milk. For the first week an enema may be necessary daily and is best given in two stages—first filling the colon with soda bicarbonate solution which is expelled to be followed in thirty minutes with a soap suds enema. The large size of the second stool will frequently surprise them as they may think the first enema has entirely emptied the colon. The amount of bran and petroleum should be increased until the constipation is corrected. If the intestines are not emptied frequently the discomfort will be great due to the large amount of fluid taken.

The treatment is continued for from four to six weeks depending on the progress made after which the patient is put on a diet consisting principally of fruits and vegetables. If necessary it can be repeated after a rest of a few weeks.

The milk regimen is not offered as a panacea for disease but it does accomplish certain things. It will change the intestinal flora and re-establish the normal flora of infancy and eliminate the pernicious bacteria. The stools lose their fetid and loathsome character, the tongue clears, the breath becomes sweet, the skin loses its dingy aspect and acquires the lively tint of health, the wrinkles disappear as the face and body are rounded out by a layer of fat, and the patient experiences a sense of well-being, of vigor and vitality. The mental change for the better is equal to the physical improvement. It usually produces an immediate and often really marvelous change and on several occasions it has been the writer's experience that the patient is slow to stop it as the improvement has been so marked.

They will gain from eight to ten pounds during the treatment which can be increased if desired by requiring the patient to rest during the first two weeks. The writer has seen them gain a pound a day while carrying out such instructions.

The stools assume a healthy yellow color and lose their offensive odor. A bacteriological examination will show that the protective flora consisting principally of the B. acidophilus will be around 85% which is the reverse of the proportions obtained before starting the regimen.

In cases in which the milk regimen is not well tolerated or is otherwise objectionable, as in some cases of obesity, the change may be accomplished by a culture of B. acidophilus with lactose and milk—Rettger & Cheplin (1) in reporting their work along this line have accomplished good results without the use of such large amounts of milk. The objection to this is the inability to secure a viable and satisfactory acidophilus culture except under certain conditions which do not make it generally available.

The results following the use of the milk regimen are very gratifying to the physician and also to the patient who is transformed from a state of physical and mental depression to one of physical and mental well-being.

(1) Rettger & Cheplin—B. Acidophilus and its Therepeutic Application. Archives Int. Med., March, 1922, pages 357-367.

DISCUSSION

Dr. William Allan, Charlotte: Dr. Rainey's paper has brought up two propositions: the question of over-feeding, and how we are going to over-feed people. I think that about one-fourth of all the people whom the doctor sees are suffering from a collection of symptoms due to overwork and under-feeding. Probably the therapeutic measure we use most is feeding.

Even on an exclusive milk diet, some people do well. I have seen sprue cases for a long period of time on an exclusive milk diet. Of course, an exclusive milk diet is high in protein, but they seem to do well on it.

People who can not take milk well, on account of curds, can get over the difficulty by citrating it. If they do not like the taste of milk they can use Bulgarian milk, butter milk or sour milk. That gets rid of the nauseating taste of sweet milk.

The trouble with the milk diet, as with a good many other measures we have tried, is that it becomes a fad.

Dr. Heath Nisbet, Charlotte: One thing we ought to remember, in these cases of constipation, especially, is to determine just what type of constipation we have, whether atonic or spastic, because the treatment, of course, is different. If it is of the spastic type, we have to give something to relieve the spasm, as bellandonna or benzyl benzoate.

In regard to acidophilus milk, we have had a spasmodic attempt to use it in Charlotte, but we have not been able to follow up the cases and see exactly what results have been obtained. I think probably Dr. Allan and Dr. Munroe and Dr. Leinbach have done more and can state the results. We have not gotten any, though probably we have not tested it out as it should be. Others have reported brilliant results where patients are in institutions and under direct control of doctors and nurses. A stain should always be made to determine whether the predominating organism is gram positive or negative, because the milk acts best on gram negative cases.

Dr. I. W. Faison, Charlotte: The milk diet is all right. The worst feature of it is that we want to give too much. If a man tells me that he takes over a quart of milk a day, I think he takes too much.

It has been worked out, particularly in these cases of constipation, and found that with sugar added, either maltose or dextrose, it is much better.

The flora has to be looked after. You cannot implant the flora of the Bulgarian bacillus there and keep it there. It will not stay. Two professors at Yale have gone into that pretty thoroughly, and they have fixed a plan of implanting a bacillus that will stay and one that becomes the natural flora of the colon. That is the acidophilus. That makes a rather pleasant milk, but in most of the milks you do not get the fat. The acidophilus milk is pleasant. By adding sugar you get milk exceedingly pleasant to the taste, and with the sugar added you can counteract the constipation without pouring in the mineral oil, which has not helped cases for me.

The milk diet is good, no doubt about it, but I must confess that the doctors feed them a little more often than I do. I do not like to have the stomach working all the time.

Dr. Bradsher, Chairman: Referring to Dr. Allan's remark about fads, it has been my experience that the fads kill a whole lot of very good measures. We put them on, then they become fads, and that kills them.

HYPERTROPHIC PYLORIC STENOSIS,
(With Report of a Case)

Leroy J. Butler, M. D., Winston-Salem

My purpose in presenting this subject is not to bring out anything new in the diagnosis and treatment of this condition but to try to emphasize the importance of early diagnosis and treatment.

Hypertrophic Pyloric Stenosis is not an uncommon condition. An accurate description may be found as early as 1841. Lofker, in 1898, was the first to operate successfully for this condition in an infant but it is only in recent years that the importance of early diagnosis and a clear understanding of the treatment has attracted much interest, for it has been shown that these cases which were formerly regarded as practically incurable, now if diagnosed and treated early show a very low mortality.

Pyloric Stenosis of infancy is usually seen between the second and eight weeks of life occurring more frequently in males, apparently there is no relation to feeding although a large portion of recorded cases have been in nursing infants.

The nature and origin of this condition is even yet not entirely clear, by some it is believed that the spasm is the primary condition and that the hypertrophy when present is secondary; by others that the primary condition is one of hypertrophy which is congenital, and to this spasm is added, that in all cases hypertrophy and spasm are present; this view seems to be best supported by the clinical symptom and pathological finding.

The clinical picture is rather a striking one. An infant usually under the age of two months well developed, perfectly healthy and gaining in weight, begins to vomit and attract attention not by its frequency but more by its persistency for at the beginning the child may vomit only two or three times in twenty-four hours; the vomiting is forceful in character, there is no fever, as a rule there is marked constipation and if the child is untreated it usually dies from exhaustion in from four to six weeks.

The vomiting of Pyloric Stenosis has certain features which are suggestive of the disease. It appears in a previously healthy and carefull fed baby, it is projectile in character, there is a persistency notwithstanding the alteration of feeding and the vomiting of a large amount at times showing that it is vomiting more than one feeding. Constipation is usually present whether marked or not depending upon the severity of the stenosis. This is rather unusual in vomiting babies due to improper feeding as we usually have an associated diar-

rhea. The gradual loss in weight is another important symptom, this condition being one of the first signs to cause anxiety to the family; there being a loss of from one to three ounces a day depending upon the severity of the condition.

According to Still, the two characteristic signs are visable gastric peristalsis and palpable thickening of the pylorus, although visable peristalic waves are observed in condition other than hypertrophic stenosis, it is invariably found in this condition and for that reason we consider it of great diagnostic value. The waves are best seen immediately after the child has nursed, they are seen as slow moving waves varying in size, appearing first under the left ribs and moving towards the right, disappearing beyond the median line, one wave is usually followed immediately by another.

The thickened pylorus varies in sizes from ½ to ¾ inch in length and from ¼ to ½ inch wide. It is felt fairly easily by one who has had experience in palpating them; by others not so readily.

According to Downs, if the stomach is emptied of gas by the passing of a small catheter and the abdominal muscles relaxed by allowing the baby to suck water from a bottle during examination, the hard movable nodule at the pyloric end of the stomach can be felt with difficulty in nearly every case, although it may be necessary to give a few whiffs of ether or ethyl-chlorid to secure satisfactory relaxation of the muscles.

The treatment as suggested by Holt will depend upon the type of case with which we have to deal, whether mild or severe. With all cases medical treatment should be given a faithful trial; if a child is observed at the beginning of the disorder, medical treatment may be used from a week to ten days provided there is not a loss of 20% of his body weight during this time.

The medical treatment consists chiefly in diet and stomach washing. If the child is breast fed it is not advisable to take it off the breast but to lengthen the hours between feeding and shorten the time of nursing if the baby is artifically fed the amount of fat should be reduced, the skimmed milk formula being the best and should be fed at four hour intervals and given one to two ounces at a feeding; some cases are fed on a cereal diet with apparently good results—this is born out by the report of Sauer, Graver & Durant.

Stomach washing is considered by some to be the most important of medical treatment as it relieves the stomach of food and mucus and has a tendency to allay the spasm; this should be done about twice in twenty-four hours and should be continued for a long time, the length and frequency depending upon the severity of the symptoms; it may be necessary in some cases to continue this for four or five months.

The surgical treatment is indicated when we fail to see any improvement under medical treatment or that the improvement is unsatisfactory, being better one day and worse the next, so at the end of a week or ten days the child's condition is worse. I do not feel that operation method should by any means be used as a last resort; in past years this was the case when the operation was so elaborate and the

mortality so high, but in recent years the operation has been simplified and the mortality is comparatively low. Downs reports a mortality of 2% on selected cases and 8% mortality among patients coming to operation within four weeks of the onset of symptoms.

The case I have to report shows no medical and late surgical treatment.

REPORT OF CASE

H. S., colored male, age seven weeks, entered the charity services of the memorial hospital with a history of vomiting, constipation and loss of weight.

Family history is negative.

Present illness began about two weeks after birth when he began to vomit occasionally; this became persistent and more frequent; at times vomiting a large amount, apparently more than he would take at any one nursing; it was projectile in character; at first he was slightly constipated. This became very marked, bowels movements were very small and dark in color, these movements obtained only after giving enemas. The child seems to be losing weight rapidly. Weight at beginning of illness 10½ lbs.

Physical examination shows a thin emaciated baby, weight 6 lbs., 4 oz. Temperature 101.4, pulse 120. Ear, nose and throat apparently negative; chest negative; abdomen shows marked gastric paristaltic waves; these were seen immediately after the baby had nursed. Tumor about size end of thumb felt to the right and above umbilicus. Stools obtained after enema, small meconium-like in color.

Our diagnosis was Hypertrophic Pyloric Stenosis. Patient operated on the following day by Dr. W. L. Grimes; operative finding shows a thickened pylorus about one inch in length and about thickness of little finger. The Fredet-Rammstedt operation was performed.

Four hours after operation, two teaspoonfuls of mother's milk, alternating with the same amount of water was given every two hours; this was gradually increased and time between nursing lengthened until at the end of 48 hours he was getting one ounce every three hours; at this time the baby's general condition was fairly good, no vomiting, no abdominal distention, good bowel movement; 72 hours after operation baby refused to take feeding; at this time a hyperdermoclysis of 50 cc. of a 10% glucose solution was given, the child's general condition became worse and 24 hours later died.

Our diagnosis as to cause of death was inanition, although no autopsy was performed.

There was no clinical evidence of peritonitis or hemorrhage; there was no vomiting, no abdominal distention; there was an elevation of temperature on second day after operation; this dropped on third day.

We based our diagnosis on the fact that the baby had had this condition for five weeks prior to operation, had lost about 38% of its original weight; and lack of post-operative symptoms suggestive of any other condition.

My purpose in reporting this case was to try to show the importance of early treatment, as Downs reports his mortality to be 50% in cases of over four weeks duration.

DISCUSSION

Dr. Harrison, Chairman: This is not a common condition—we see it only rarely, but it is such an extremely curable one that I do not think any case ought to die, with the present proven methods that we

have for its cure. When they die, in a large majority of cases, "some one has blundered." What medical treatment will not do, surgical treatment will do. On account of the fact that treatment will cure practically all these cases, it is extremely important for any man dealing with children to recognize this condition.

There is a very clear clinical picture. You rarely get this peristaltic wave from left to right over the stomach of an infant in any other disease. It very rarely comes from anything else, and when you see it, especially if during the early weeks of life, you can be pretty sure of the diagnosis. After a little experience it is quite easy to find the tumor, which is the pathognomonic sign. Look in the upper right quadrant and palpate, and you can find it without much difficulty if the child is not crying. Give a bottle of water while palpating the abdomen, or, if necessary, a little anesthetic. X-ray examination is helpful sometimes. A good rule, I think, is never to operate if two-thirds of a barium meal passes the pylorus in four hours.

Another rule which is useful, and appears to be very generally accepted, is never keep the child on medical treatment after it has lost twenty per cent. of its birth weight, but resort to surgery promptly.

One of the principal things to do while you are making the diagnosis and while trying the medical treatment is to provide these children with *enough water*. I think that most of them die from want of water and not want of food. While you are making up your mind what it is, you should see that the child gets a sufficient amount of fluid.

The thick gruel feeding is certainly a most efficient way of treating these cases, though not an absolute panacea, and I believe that half, at least, can be gotten by on this treatment. The thick gruel feedings, I think, were started by Dr. Sauer. They ought to be fat-free, that is, made up of fat-free milk and water in the right mixture, often two of water to one of milk, with one part to eight of cereal, cooked about one hour until of thick gruel consistency. It is rather difficult to get into the child, but if you have a good nurse you can use it. What it does we do not know, but it helps them. The Fredet-Rammstedt operation is very good, far superior to gastro-enterostomy, and will cure those youngsters that medicinal measures fail on, if the surgeon is given anything like a decent chance—that is, if operated on before the child has lost more than one-fifth of its birth weight.

Dr. I. W. Faison, Charlotte: It has been my fortune to see a good many of these cases, and I have almost quit the conservative method. If the muscle is hypertrophied it will not get well unless you cut it. In hypertrophic stenosis I get a surgeon and have him cut the muscle. If the case comes to you with a general loss of weight and continued projectile vomiting, you can, almost without making an examination, feel that you have a muscular trouble. If a case comes in and they do not know or do not recall a history of vomiting, try them for a few days with medical treatment, feeding every four hours, resting on the right side, with a hot water bag over the stomach.

I have had only one or two cases out of fourteen or fifteen without operation. Two went by, and I feel that there was not much muscular condition in these two cases. I fed them on thick gruel. Whether any of the other things would have done I do not know, but I used the thick cereal, hot water bottle, and atropine sulp. 1/960 gr. I can slip in enough milk of magnesia during the day to get a good action.

Now, as to the operation. We have used the Rammstedt altogether. Some like to put in a piece of omentum and sew it in.

Owing to the shock and weakness, it is a good thing to put about a pint of normal salt solution in the abdomen and leave it there, so that the child can rest two or three or four hours without trying to feed it.

Since we have been doing that, there came a big surgeon from Boston. He was opposed to the regular Rammstedt, because he felt that after cutting the muscle, in the course of fifteen or twenty years, it might not hold. So he instituted a new plan. He cuts through the muscle, down into and through the mucous membrane, puts forceps in and pulls it out, brings these edges through and sews them together. He puts back the muscle condition that was there before he operated. He has an idea that to bring the muscle back and sew it up will leave the pylorus in better condition than to cut it and leave it open and let it fill up with granulations. He said he had been doing that way for the last three or four years. I myself do not like going through the mucous membrane.

Dr. Butler, closing the discussion: I do not know very much about the cereal feedings in these cases from my own personal experience, but apparently Graves and Durant have gotten wonderful results with it. I saw an article in the Journal of the A. M. A. this week, by Dr. Grulee, of Chicago, advising against the use of thick cereal and suggesting the giving of albumin milk. He said that he did not think children could take care of the thick cereal at that age.

THE ENDOCRINE GLANDS AND IMMORALITY

BASED ON A REVIEW OF THE LITERATURE AND THE PHYSICAL EXAMINATION, BLOOD SUGAR AND BASAL METABOLIC RATE FINDINGS IN FORTY-TWO MORALLY DELINQUENT YOUNG WOMEN

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In our careful review of medical literature on this subject, we have been deeply impressed by two facts:

First—the most gratifying advances in scientific endocrine study, diagnosis, and therapy in a very closely allied and sister field—namely, in mental diseases and states, and in neurology.

Second—the paucity of reported careful and thorough study of the physical and functional conditions of our immoral young women. In the field of our endeavors here presented, the subject has been practically untouched, as is evidenced by a recent personal communication from the Secretary of the American Medical Association, in which he advises that "we have had the Quarterly Cumulative Indexes carefully searched for articles which might be incorporated in the bibliography on the subject of hyperthyroidism or endocrine disturbances in girls who are morally unstable, and the report has just reached me that our reviewers have been unable to find any articles that might be of interest or service to you in connection with the study you are making." However, what little we have found to bear on the subject in hand rightly should be presented.

Recently, Krabbe (1) of Copenhagen has carefully reviewed the literature on precocious sexual development in relation to the adrenal cortex, and concludes that to date we have insufficient evidence to allow us to connect the two functionally, despite many excellent workers (1) believe otherwise.

Goddard (2) advises that in his last 460 juvenile delinquents, 21% had enlarged thyroids, and that goitre is one cause of some psychopathies. He also states (3) that "much of juvenile misbehavior (one type of which is immorality—parenthesis the writer's) is as surely due to a brain functioning badly on account of disease as is similar conduct in adult." McCready (4) in 1917 reported that in his juvenile court work he observed that "practically without exception all girls charged with sexual offences have enlarged and overactive thyroids, in many even before the development of secondary sexual characteristics," though he does not state on what findings he made the diagnosis of "overactive thyroids." Weinburg (5) has recently read a paper in which he discussed the mental side of hyperthyroidism. In his article we find evidence to support the view that hyperthyroidism through mental states predisposes to moral laxity. Farran-Ridge (6), Sydney, and Worster-Drought last year reported "a case of mental deficiency associated with dyspituitarism" because of its interesting association of mental and moral deficiency with definite evidence of endocrinopathy, though the moral turpitude was not along sexual lines but was kleptomania. Miller (7) causes us to associate sexual immorality and hyperthyroidism as well as disturbances in the secretion of the parathyroids, adrenals, pituitary gland, and gonads, when he points out that the thyroid gland immensely influences our physical and mental activity—"irritability of body restlessness, rapidity of expression, swiftness of thought"—and further adds that "a correlation is invariably perceptible between physical reaction to stimuli and psychical reaction to stimuli." An entire paragraph from the same author's article is worth repeating:

"Since the primary energies of the organism are concerned with self-preservation or race (that is, extended self) preservation and are expressed, whether emotionally or somatically, in feeling and reproduction, we cannot be surprised that the thyroid gland directly influences, not only metabolism and reproduction, but also the general

hormone equilibrium throughout the body. It is easy to see from this standpoint of 'primary energies' *why* the thyroid should be so intensely susceptible to strong emotions, and also why, when it is diseased or functioning defectively, there should be a corresponding emotional derangement and instability apart from the hormone effect on the nervous system."

Harrower (8) goes further by stating "that all psychic processes, whether emotions or states of mind, are to be explained in terms of glandular secretion," though he gives no proof to that effect. Bandler (9) makes much wider statements, with marked deficit of proof: he believes that "a girl who is hyperthyroid, and one who is hyperpituitary, with a consequent stimulation by the latter, exerted tropically on the uterus and the sex sphere, has its parallel in the stimulation of the cerebral activities, phantasies, and thoughts of a sex quality." The same author states that the endocrine glands, especially the thyroid, adrenals, and pituitary glands, play a large part in the maintaining of a high threshold of response to physical and psychical stimuli, which threshold, when lowered by hyperaction of some endocrine glands or by hypoaction of others, allows human beings to respond to a stimulus, which would not influence them at all if their threshold of response were at its normal level. His theory is based on the assumption that the brain acts as one single cell, and that the brain action is mind action. Obviously, his assumption is not sustained by our present day knowledge of anatomy, chemistry, and psychology.

Poate (10) is much more conservative and reasons more in the realm of the known rather than in theories built on mere supposition, when he, admitting that there are doubtless more endocrine dysfunctions in immoral young women than in a corresponding number of moral women, says that he "cannot see how one could *prove* any direct connection between the endocrines and the incidence of sexual immorality, or show whether such a connection were cause or effect.

"It would be as easy to assume—and as impossible to prove—that prostitution caused endocrine abnormality as that the latter caused prostitution. Since both hypothosese are equally possible, neither is likely to be correct. It is more probable that both prostitution and endocrine abnormalities are effects of some deeper cause; that both are equally expressions, that is, of a general inferiority due either to faulty development or to abnormal heredity, or both."

Davis (11) who believes that the endocrine glands play a large part in the maintaining of the proper tonus of the autonomic nervous system, quotes the following from Kempf's article (12), "The Tonus of Autonomic Segments as Causes of Abnormal Behavior,"—"disturbances in the autonomic apparatus if not readjusted most seriously jeopardize the individual's biological career and self-control in his struggle for life and social esteem." Assuming that Dr. Davis is correct in his belief, we have here some definite evidence pointing to the end that endocrine disturbances predispose to sexual as well as other irregularities, however we cannot as yet accept such as established facts. Some of our "endocrinologists" would claim that the endo-

crine glands cause the nervous signs and symptoms observed by Healy (13) to be associated with conduct disorders, some of which were sexual laxity, though Healy makes no mention of any such connection in his report.

A recent reviewer (14) takes the opposite view when he states that "the endocrines are servants of the nervous system. They are not its masters." Very recently Lewis (15) and Davies have very ably made a definite advance in this field and cause us to be intelligently optimistic in early diagnosis and the benefits to be derived from glandular therapy in some early and mild cases. They conclude that "since the activities of the nervous system, and particularly those of the autonomic divisions are closely associated with endocrine functions, one must suppose that maladjustments of the individual to certain situations will produce a response in the glands varying according to the strength of the impulse, development, vigor, and physiological activity and balance existing between the component parts of the gland and on the other hand, original defects in these glands connected as they are with external form, and visceral and metabolic functions must produce limitations in the action systems and peculiarities of behavior."

Prior (16) in 1920 "found thymus (administered therapeutically—parenthesis the writer's) useful, as regards both sexes, in cases of increased sexual irritability; here, he claims, "it probably acts by diminishing ovarian, thyroid, or pituitary secretions; an overaction of any or all of these will excite the sexual organs," yet his implied function of these glands cannot be admitted as a proven fact, no matter how seriously we accept his statement.

In 1919 Miles (17), at the Nutrition Laboratory of the Carnegie Institute, Boston, made a very ingenious study of the effect of prolonged restriction of diet on sex expression, and found, using 24 normal male students, at the end of four months, that in 96% of the cases there was a decreased general sex interest, and that their basal metabolic rates were reduced an average of 18% per kilogram of body weight. He also noted a lowering of blood pressure and pulse rate. Within a few days after the experiment ended many of the class were already experiencing a return to normal of their sex desires and activities. If we knew the converse of this experiment to be true, it would doubtless mean that in hypersecretion of the endocrine glands that augment metabolism, there would be increased general sex interests, desires, and activities. This would be in accord with the belief of some, based on the study of lower animals, that sexual activity is probably dependent on the metabolic level.

Hirschfield (18) in his treatise on sexual pathology states that we have learned how intimately in this field the psychic depends on the physical and that our present knowledge of the endocrine glands has revolutionized sexual pathology, yet many of his statements are lacking in clinical or laboratory proof.

Matsumoto (19) informs us that the interstitial cell secretion of the gonad in the male provides "the sexual hormones fundamental for the sexual instinct" and that "failure of the sexual instinct, the

source of psychic energy and the elan vitale of youth, may be correlated with regressive atrophy of the reproductive organs and the biochemical changes of the neurones.'' From his statements it is easy for some to arrive at the conclusion that, in the presence of a lowered mental power, a hypersecretion of the sex glands would cause sexual immorality.

It is quite clear from the above review that as yet we are very far from our goal, and that very few meager facts in this field have been established, all of which should be to us a stimulus for renewed energies in a most hopeful, needy and beneficial field. Burr (20) has rendered such a true summary of our knowledge in this field that I freely quote him. ''The real relation is very obstruse and we know very little about it. This much seems to be apparent, that in hypothyroidism there is a mental dullness, in hyperthyroidism there is an occasional apparent increase in mental power which really, however, is a mere mental irritability such as one sees in mania. My personal belief is that there is some relation between the endocrine glands and the mental power but what it is and how the glands act is still unknown. In practical life I have never found any result from the administration of glands in the class of people whom we call the morally insane or the morally imbecile.'' Nor would our review be complete without the following quotation from Kendall (21): ''When it comes to establishing relations between the other ductless glands and the thyroid, progress can only be made when the various activities of the glands are viewed in as broad an aspect as Plummer has suggested for the action of thyroxin. Disturbances of the pituitary lead to changes in basal metabolic rate which are marked but are less than those found in thyroid disturbances. Changes in the pancreas and what we know of the adrenal also lead to changes which are smaller than that produced by thyroxin. We can at least tentatively assign to the thyroid the supplying of an agent which is of fundamental importance in the production of energy. This can be carried one step further in a chemical sense, and we may assume that thyroxin is involved in the production of carbon dioxide. The other ductless glands then assume positions of secondary importance to the thyroid, in carrying out these chemical reactions, and may be assigned the role of preparing the various metabolites for their final action with thyroxin. No definite hypothesis can at this time be given beyond the fact that the various clinical syndromes produced by hyper- or hypoaction of the various glands, are syndromes resulting from the effects of these substances throughout all the cells of the body, through their action in maintaining the rate of energy production going on within the cells.''

Our report is based on the physical examination, basal metabolic rate and blood sugar findings in forty-two morally delinquent young women who were at Samarcand Manor, the North Carolina State Institution for such women, Samarcand, North Carolina, on September 1, 1921. Our patients ranged in age between 16 and 26 years, the average being 19.72 years. They had been under excellent hygienic, dietetic and medical treatment in this institution from 5 months to 2

years and 11 months, the average being 2 years and 3 months. On admission approximately 87% were infected with the Spirochæta pallidum, the diplococcus of Neisser, or both, though each had been well treated for her infection prior to our study. Our forty-two were chosen because of their high mental and physical rating by their Superintendent.

The physical examination comprised: (1) distribution and quality of the hair; (2) tremors of fingers and tongue; (3) palpation of thyroid gland; (4) eye signs of dysthyroidism; (5) three temperatures, pulse and respiration determinations over a period of 2 days.

The basal metabolic rate determinations were made under the accepted conditions of 15 hours' fast, rest in bed for 10 hours, and absolute rest in bed and absolute quiet for at least 30 minutes prior to the determinations, which were made by the use of two accepted portable apparati (22) which determined the rate of oxygen consumption per unit of time. All determinations were done at least in duplicate, and as many more times as were required to give "check" readings. From this figure, through the body area formulæ (23), we were able to compute each patient's variation from her individual normal by the use of the tables of normals established by Aub and DuBois (24). We considered any determination between plus and minus 15 as normal.

Our blood sugar determinations were made by the Epstein modification (25) of the Benedict method (26). Duplicate readings were made in each case. We have called all figures between 0.075% and 0.110% as normal.

From our method of study just outlined, it is clear that we were using the standard methods for diagnosis of dysthyroidism. We purposely did this for two reasons: (1) we know of no other dysfunctioning endocrine gland, except a few long established clinical entities with apparent anatomic changes, that can scientifically and accurately be diagnosed as such, and (2) we were best prepared and equipped to make this study in the limited time of three days.

The following is a tabulation of our findings:

Physical Examination: 24 cases, or 57.6% showed signs of hyperthyroidism (that is, hair changes, tremors, eye signs or palpable gland—this latter, in our opinion, of no value in determining the functional activity of this gland) while none showed the signs of hypofunction. By the word "signs" we mean: at least one very definite physical sign, or two or more moderately definite signs. All temperatures ranged between 98.2 and 98.8 on three readings, except one which was 99.4, 99.6 and 99.8. In this latter case we obtained our highest basal metabolic rate which was plus 100%. Our highest pulse rate was 100, the lowest rate was 60, with an average of 74.6. According to the accepted teaching of today, these pulse rates are much lower than ordinarily accompany the basal metabolic rates we found to exist. However, they are not entirely incompatible with the basal metabolic rate according to Else's (27) belief that the thyroid gland (and doubtless other endocrine glands also) with proper medical, hygienic and dietetic treatment, just such as our patients

had been receiving, would alternately increase and decrease its output of Kendall's thyroxin (21), which might reflect itself in the pulse rate to a greater degree than in the basal metabolic rate. The respiratory rate ranged between 16 and 24, with an average of 19.6. The higher pulse and respiratory rates in general accompanied the higher basal metabolic rates. We deeply appreciated the need for fuller physical examinations at the time of our studies, but such was not possible. This constitutes one reason for our being unable to arrive at more definite conclusions.

Basal Metabolic Rate: Our highest was plus 100, and our lowest was plus 1. 31 cases, 74%, had a rate of over plus 15, while 35 cases, 83.3%, had a rate of over plus 10. The average increase over plus 15 was plus 47.6 while the average increase over plus 10 was plus 42.

Blood Sugar: The highest reading was 0.235%; the lowest 0.075%. 32 cases, or 76.4%, were above normal, averaging 0.145%. The blood sugar in general was increased with the basal metabolic rate, though this was rather variable, which is not easy to explain.

On further tabulation, we find the following facts:

TABLE I

Increased	B. M. R.,	increased	blood	sugar,	definite	physical	signs,	31 %
"	"	"	"	"	normal	"	"	25.8%
"	"	normal	"	"	definite	"	"	12 %
Normal	"	increased	"	"	"	"	"	12 %
"	"	normal	"	"	normal	"	"	4.8%
"	"	"	"	"	definite	"	"	2.4%
"	"	increased	"	"	normal	"	"	7.2%
Increased	"	normal	"	"	"	"	"	4.8%

TABLE II

Increased	B. M. R.,	increased	blood	sugar,	62 %
Normal	"	"	"	"	19 %
"	"	normal	"	"	9.5%
Increased	"	"	"	"	9.5%

CONCLUSIONS

1. According to present standards of diagnosis, our findings above recorded, point to some hyperfunction of the thyroid gland in about 60% of our cases, though this figure would doubtless be lowered some by more thorough physical examinations and case histories. However, in the present state of our knowledge, we believe that our findings might be caused by hyper- or hypofunction of other endocrine glands, such as the adrenals (21), the pituitary gland, ovary, and other diseases (28) whose actions, directly or indirectly, influencing the thyroid, or each other, might cause our reported findings.

2. Our present knowledge of the endocrine glands will not permit our connecting them, directly or indirectly, with immorality in young women—either as cause or effect, despite the fact that doubtless dysfunction of these glands is in proportion to the established fact that physical and mental abnormalities are more common in this type of woman than in her moral sister.

3. At present we will do well to diagnose endocrine malfunctions, and give proper treatment therefor, just as we should do in any and all other physical defects found by careful examination. This might result in more benefit than we now have reason to expect.

4. In closing we must state that the inception of this type of work came to us from Miss Agnes B. McNaughton, Superintendent, Samarcand Manor, Samarcand, North Carolina. The accomplishing of this study and the report thereof was made possible by Dr. L. B. McBrayer, Superintendent of the North Carolina Sanatorium for the treatment of Tuberculosis and Director of the Bureau of Tuberculosis. Calvert R. Toy, S. M. Crisp, Jr., and Paul A. Yoder, all of the Medical School of the University of North Carolina, aided invaluably as technical assistants.

DISCUSSION

Dr. Bradsher, Chairman: This is a very interesting paper. Personally, I should like to have some one state in the discussion the status of Dr. Harrower in the medical profession.

Dr. A. A. Barron, Charlotte: There is a question as to the metabolic rate in nervous women. It has been my experience since 1915 in 155 metabolism tests that quite a few showed increased metabolic rates and, not infrequently, very considerably. This is in many instances, no doubt, due to the technique. However, in many cases where I have felt satisfied nothing was wrong in regard to technique, no escape of air, etc., I have found variable increased rates. I desire to make at this time, a statement in regard to Dr. McCrae's most interesting paper last evening. It might be possible that some of us will get the impression that many fat people, especially fat women, belong to the hypothyroid or myxedema cases and prescribe thyroid preparations indiscreetly. It has been shown fairly conclusively by workers who have a large field that the majority of these cases of obesity show no metabolic disturbances from a thyroid standpoint and that the promiscuous use of thyroid extract is not only useless, but may be dangerous. I have observed some 40 or 50 cases which were classed as obese and only a few showed any metabolic disturbances. The myxedema cases will show clinical evidence and, when only casually observed, cannot be mistaken. Metabolic determinations without a careful history and study of the patient are, as a rule, of little value and are likely to lead to mistakes. In many cases of toxic thyroids of the adenomatous type, the metabolic rate may be only slightly elevated and still the patient be in a serious condition. This is due to the low resistance of the patient.

Dr. William Allan, Charlotte: Dr. McBrayer always brings us a careful and painstaking report, and the thing that rejoices me about it is that it is the result of his own investigation and hard work. I think that this is particularly timely, because in this State we are on the verge of establishing psychiatric clinics in the juvenile courts to determine moral delinquency, and I think his calling our attention at this time to endocrine conditions is of great value.

Dr. I. W. Faison, Charlotte: Finally, after a year of hard work, we have found a thoroughly educated and trained man to put in charge down at the School for the Feeble-Minded as assistant physician to Dr. McNairy. He is going around over the State to help look out for these things. He has been in the Post-Graduate School of New York under Dr. Clapp for five or six years, and he is thoroughly experienced in this line. I wish he were here this morning to talk to you.

In this line I have a most peculiar case at home, which baffles me. It is a young boy, fifteen years old, feeble-minded. He can be sent up town to buy whatever they want him to buy, and can get the change all right, and bring back the article purchased and bring back the change. This boy suffers with chronic priapism, and has five or six attacks of masturbation each day. I have been persuaded to believe that the endocrine glands have little to do with this condition, and that there is some irritation of the spinal cord. I tried to get them to have him castrated, but they did not think it would do any good, and it probably will not. But even if he did not get well I think it would be a good thing, because that seed ought to be destroyed anyway. This is a most peculiar and interesting case.

Dr. Cyrus Thompson, Jacksonville: You asked a question a while ago, Mr. Chairman, and I believe no one has seen fit to answer it. You asked what is the estimate of Dr. Harrower of California in the medical profession of North Carolina. I cannot speak for any one at all except myself, but I think he is a great promoter. He ought to belong to the Mulberry Sellers Club, in which "there are millions." I think he is as fine a fake as ever had money to advertise. But that is only my opinion.

Dr. Bradsher: That was my opinion, but Dr. McBrayer had mentioned his name in the paper, and so I wanted to inquire.

Dr. Thompson: I bought some years ago Sajous's two-volume work, and undertook to study up about the subject. I was impressed with the fact that the whole business of life goes on under the guidance and direction of the secretions of the ductless glands. I read the two-volume work, and I learned two things: First, that there is everything in it; and, second, that we know nothing definite about it. Then I gave my books to my friend, Dr. Wood, who is younger than I am and who can study more.

If I were a younger man, however, I should devote a good deal of time to the subject. When the youngest of you gets to be as old as

I am, we shall have learned much more about this matter than we know now. It lies at the bottom of everything. When I think of it, I think of that little verse of Tennyson's:

> "Flower in the crannied wall,
> I pluck you out of the crannies,
> Hold you here, root and all, in my hand,
> Little flower—but if I could understand
> What you are, root and all, and all in all,
> I should know what God and man is."

We do not know much.

The thing that stumps me about Harrower is, where does he get all the glands to make all the stuff that he is selling?

Dr. Barron: I would like to ask Dr. Faison if he has considered the possibility of a tumor in the case he spoke of.

Dr. McBrayer, closing the discussion: In regard to the Chairman's question about Dr. Harrower, I think Dr. Bradsher would have gotten my opinion of Dr. Harrower if I had read the whole paper. I said that Harrower, I think, is absolutely rabid, and states things that no one has proved and that no one can prove.

I want to say amen to everything Dr. Barron said. I have recently been working with Boothby and Plummer at the Mayo Clinic. The basal metabolism rate comes and goes somewhat in curves, as does the individual cell content of thyroxin. So a person might have an exophthalmos, even, and have a plus eleven rate. If you will take several readings you will find that the patient is coming out of a remission, and coming along up, and inside of two weeks you will find that the patient has a plus rate of forty. She is a poor risk. Put her to bed to rest up. Keep elimination going along, clean up infected teeth, etc., and she may drop down to plus eleven again. One reading does not mean anything.

While there, I was much interested in the number of readings per patient, and I did not see less than three for any patient who had been in the hospital as long as ten days.

Your symptoms, incidentally, do not go into remission, as does the output of thyroxin and the basal metabolic rate. You may get a plus twenty and have a bad myocarditis, and you may get a plus fifty and the patient be in good shape.

The laboratory method is not so difficult. Almost any one who can study a little can do blood chemistry. The big man of today is the man who can interpret it into something that will be of value to the patient. We can in hyperthyroidism, probably in the beginning, get a decreased metabolic rate, which means a decreased amount of thyroxin in the tissues. That coming about in nervous women, in people who have chronic focal infection, may cause a demand by the cells for more thyroxin, which in turn calls for more thyroxin from the thyroid gland, and when the increased demand for thyroxin in the individual

cell ceases to exist, with the thyroid gland putting out more thyroxin than needed to make up the original deficit, you will have a hyperthyroidism.

I want to thank Dr. Allan for his kind references to the work we are trying to do at the Sanatorium. I can say the same thing about him.

Dr. McNairy probably has a very good man in the new man he is getting. They are going to put in a Tissot gasometer if they can, and we shall expect some very good work from there.

As to the case of which Dr. Faison spoke, we do not know anything about the endocrine glands that would explain the condition of that boy.

I am not quite in position to agree with what Dr. Thompson said, although I would like to agree with it, because he said it. I never disagree with Dr. Thompson any more about anything. But some of the ablest workers, Dr. Thompson, are thinking that probably the endocrine glands are servants of the central nervous system, and are not running the central nervous system.

INFANT FEEDING BY THE GENERAL PRACTITIONER

J. L. Hanes, M. D., Pine Hall

The busy practitioner has frequently failed to get results in treating bottle fed babies because he has allowed the mother or nurse to feed the child according to some formula as sent out by the manufacturers of the proprietary foods for baby so many months old.

In other words he is pursuing the disastrous course of trying to make the baby fit the food instead of making the food fit the baby.

We must realize that each child is a law unto itself and that there is no hard and fast rule by which to feed them.

Breast feeding should always be encouraged and assisted when possible but it is frequently necessary for the family physician to advise and instruct the young mother as to the proper way and frequency of giving the breast.

Many cases of "three months colic" and other types of over-feeding can be corrected by proper intervals of nursing and limiting the time to the breast.

Many years ago when I was a medical student the top milk mixture and cream percentages then in vogue were very difficult to understand and prepare and we always started the baby on the bottle with fear and trembling.

In recent years, however, infant feeding has been very much simplified and gratifying results obtained through the adoption of the caloric system.

The essential requirements for infants' food are that it should contain the proper elements to maintain nutrition and allow for growth, should be digestible, and should contain the proper quantity of food which is best estimated by caloric standards.

The proper elements in the food are Proteids, Fats, Sugars, Mineral Salts and water, all of which are contained in cow's milk, and by diluting the cow's milk with water and adding sugar we can furnish the caloric requirements in a digestible form.

I always boil the cow's milk in feeding young infants because it makes the proteids more digestible and destroys whatever bacterial content the milk may contain. I want to say right here that in bottle feeding infants on milk, water and sugar mixtures that it is very important that the physician should inspect the bottles, nipples and utensils and instruct the nurse as to keeping them clean and sanitary, also it is best for him to make the first mixture by measuring out the proper amount of water into a clean saucepan and bringing this to a boil, while boiling pour in the required number of ounces of milk and bring to a boil as rapidly as possible, stirring vigorously so as to prevent the formation of a scum upon the top. Boil for three minutes and take from stove and add the amount of sugar required, stir thoroughly and then measure out the amount of each feeding into as many bottles as there are feedings in twenty-four hours, then place the bottles on ice in the refrigerator.

The best and purest milk obtainable should be used and the food for the entire twenty-four hours should be prepared as soon as possible in the morning after the milk comes.

When feedings are to be given the bottle should be placed in warm water long enough to bring the temperature of the mixture up to that of mother's milk. The individual infant needs a certain amount of food to use up in heat, energy and growth, or in other words we say that this particular infant needs for its well being during each twenty-four hours, so many calories of food.

When we know the caloric value of the different elements contained in the food we can very readily figure out the amount of each required.

One	Ounce	Whole Milk	equals	20	Calories
"	"	Skimmed Milk	"	14	"
"	"	Buttermilk	"	10	"
"	"	Protein Milk	"	15	"
"	"	Cane Sugar	"	120	"
"	"	Dextri Maltose	"	120	"

Infants require, roughly speaking, from forty to sixty calories per pound weight each twenty-four hours, and here is where the skill of the physician comes into play, for in giving many infants the caloric requirements per pound weight you would set up an intolerance to fats or sugars or both that would require many weary days and perhaps weeks to overcome.

The best course for the beginner to pursue, particularly in feeding young infants or those who have had some nutritional disturbance is

to underfeed rather than overfeed for a while until he gets his bearings and then cautiously increase the strength of his mixture until the limit of tolerance has been established.

Any form of sugar may be used in the mixture, but personally I prefer Dextri Maltose, a standard preparation of Dextrin and Maltose that is unvarying in its caloric strength.

The best index to the progress you are making with your feeding case is the daily weight, and the baby should be weighed on reliable balance scales and the weight put on chart for comparison. It is also important that the physician should never take the mother's or nurse's word as to the condition of the stools but should himself examine the napkins each day.

It is not my purpose to go into the details of feeding healthy infants in this paper but I want to particularly call the attention of the general practitioner to the possibilities of Protein Milk in the treatment of the summer diarrheas that will soon be upon us. Protein Milk is prepared by adding to one quart of whole milk that has been warmed to 100° F., one-half ounce of liquid rennet or Essence of Pepsin or one junket tablet may be dissolved in water, added and stirred slightly; after standing until it is firmly coagulated it is poured upon two layers of gauze or cheesecloth and suspended over vessel for about one hour to drain off the whey. The curd is then thoroughly washed two or three times with boiled cold water. The dry curd should now be rubbed through a very fine wire sieve with large wooden spoon or potato masher, gradually adding during this operation one pint of buttermilk. Enough boiled water is added to make one quart. In making protein milk care should be taken to see that it is thoroughly rubbed through a fine mesh wire sieve during the addition of the buttermilk and water and when properly made it will pass through an ordinary bottle nipple. The taste of protein milk is rather sourish and some infants do not like it at first but by adding a little sacharine they will take it readily. In protein milk we have a mixture low in sugar, moderate in fat and high in protein that is a life saver in feeding those cases of fermentative diarrhea that are so often seen during the hot summer months. Protein milk should only be given until the diarrhea is checked and the stools begin to form in putty like consistency, although Finkelstein and others have by the addition of sugar given it indefinitely. After the protein milk is discontinued the child may be put on mixture of boiled skimmed milk and water and then worked back to boiled whole milk, sugar and water mixture. Where it is impossible to prepare the protein milk, fresh buttermilk may be substituted, however, I strongly urge the general practitioners to give protein milk a trial in feeding cases of diarrhea this summer.

DISCUSSION

Dr. J. Buren Sidbury, Wilmington: The question that is of the most importance to the general practitioner, to my mind, is the same one that has perplexed the pediatrist, as well as the companies which

are putting up proprietary foods or who are putting up dry milk and dextro-maltose. To my mind, the general practitioner needs something that is fool-proof. Now, protein milk is one of the hardest things to make in infant feeding. Personally, I have not ordered protein milk in three years, on account of the difficulty of making it. We find in the milk station that children do just as well on lactic acid milk, which can be made much more easily. Protein milk made by a mother or by a trained nurse does not always turn out well, and if it is not well made, the mother is at a loss as to what to give the baby.

It is also true that lactic acid milk does not always turn out well.

It seems to me that the general practitioner wants something that is practical, that is easy, that he can describe to a mother to carry out with the least possible detail and with the greatest amount of accuracy. I believe the general practitioner will get a great deal better result by using dried protein milks, as Casec, Protoloc, or Powdered Protein Milk, all of which require simple additions of water. That will give better results than trying to teach the mother to make protein milk, in my opinion. That has been my experience, and I believe it will be the experience of most of the general practitioners, that the simplest feeding will be the best feeding, and protein milk is one of the hardest things that we can give a mother to make.

It has been my practise for the past few months to have the mother prepare Lactic Acid at home in the following manner:

Take one quart of milk, skim off the cream or pour off eight ounces off the top of the bottle, boil the skimmed milk three minutes, let cool to body heat or from 100 to 102 degrees F. To this add one ounce of culture and put in the fireless cooker with a receptacle of hot water but do not let the hot water be close enough to touch the milk for in such event the milk would get too hot and not turn to clabber. When the milk has turned it is run through a sieve four times and eight ounces or more of cold boiled water is added, the water added depending upon the desired strength of the Lactic Acid Milk. This is then put in the ice box till needed.

In this milk you have an artificial buttermilk which has only one known organism. In buttermilk you have no way of knowing how many or what kinds of organisms there are present in the pint of buttermilk which is used in the preparation of protein milk. If buttermilk as such is used it should be boiled before being used in the preparation of the protein milk.

To make the culture to make the Lactic Acid I give the following instructions:

Take eight ounces of skimmed milk, boil five minutes, let cool to body heat and add one to two tablespoonfuls of either B. B. Culture or B. A. Culture which can be obtained from the B. B. Culture Co., Yonkers, New York. This is put in the fireless cooker just as the milk was with the hot water. The hot water serves to keep up an even temperature for five or six hours which is usually sufficiently long to turn the milk. When the culture is firm it is put on ice and one to

two ounces is used for inoculating the milk each day. It is quite practical and very satisfactory to use some of the milk from the previous day, one or two ounces, to inoculate the milk each day. This can be continued for three or four weeks when it is usually advisable to start a new culture with either the B. B. or the B. A Culture.

In the country where it is not practical to have ice some one of the dried protein milk products appeal to me as being more practical and more satisfactory than the more complicated formulæ.

Dr. Hanes, closing the discussion: I have found that I do not have any trouble in getting the mother to prepare the protein milk properly if I prepare it for her the first time, showing her how to make it. Of course, you can use the Casec or those dry protein milks, but I have found it just as easy to show the mother as to show her to make other milks. Of course, it must be done properly, so that it will not separate in the bottles.

COMBATTING "SUMMER DIARRHEA" WITH LACTIC ACID MILK

A RESUME OF THE DISPENSARY CONDUCTED BY THE WAKE COUNTY HEALTH DEPARTMENT DURING THE YEAR OF 1922

Roy S. Dearstyne, Laboratory Director

Much has been said, pro and con, as to the virtue of Lactic Acid Milk as a curative agent in cases of infantile diarrhea. The success of the various dispensaries with the use of Lactic Acid Milk, as far as can be learned, has varied considerably; the cause of Lactic Acid Milk being uncertain to the extent that, as a rule, American cities maintain no dispensary of this kind during the season of "Summer Diarrhea." Under this term is included simple indigestion, fermentative diarrhea, and infectious diarrhea. The mortality rate is unusually high, deaths from diarrhea and enteritis under 2 years of age since the establishment of the Bureau of Vital Statistics in North Carolina being in 1914, 1,900; 1916, 1,747; 1917, 2,226; 1918, 1,913; 1919, 1,337; 1920, 1,553; 1921, 1,587. Thus it is seen that this disturbance is of sufficient gravity to make any cure, or help at a cure, a valuable adjunct in decreasing the death rate at a place in life's history, which from a public health standpoint, is most valuable—the age of infancy or early childhood.

Lactic Acid Milk, as a scientific product, does not date far back. In its primitive form, it was a product of the plains of Asia where the various fermented milks form a part of the daily diet, and where a hardy and rugged race is produced. Theoretically, it is formed by the inverting of the sugar of milk, lactose, into lactic acid. This process is also the normal process in souring of milk, but the variegated bacterial flora, and inconsistent conditions attending the usual

souring process detracts from this product to such an extent as to render the ordinary sour milk valueless as a curative agent. Buttermilk, the by-product of the churn, has found favor in the eyes of some, and undoubtedly is of some value, but the same inconsistencies as mentioned above renders it questionable.

There does not seem to be much actual investigational work on record either for or against lactic acid milk. Considerable work, however, has been done on Eiweissmilch or protein milk which has been fed with the same idea in view. Protein Milk, generally speaking, is a prepared milk in which the sugar content has been lowered and protein content raised which, according to Finkelstein, is beneficial because (1) its low sugar content (2) the dilution of the whey (3) high casein (4) combination of relatively high fat and high calcium, this favoring the production of formed stools.

Wilcox and Hill of Belfast report the following work relative to protein milk*:

From May, 1911, to November, 1912, 261 children suffering from a variety of digestive disturbances were given protein milk. The ages varied from prematurity to 9 years of age. The cases were grouped into the following clinical groups: (1) Acute infection, (2) Apparently non-infectious indigestion, (3) Simple diarrhea. The results: Of 256 children, 72 were three months of age or less, of whom 56% did well; 97 were from 4 to 7 months of age, of whom 76% did well; 62 were from 8 to 12 months of age, of whom 85% did well; 25 were over 1 year of age, of whom 72% did well. These gentlemen show that out of a large number of cases of the various forms of digestive disturbances, protein milk proved highly beneficial in a large number of cases.

In 1915, Meninger, of the Mt. Zion Hospital, San Francisco, Cal.,** after extensive investigational work, arrived at the following general conclusions regarding the use of protein milk: "Protein milk is a dietetic measure which is reliable and cures most cases of intestinal derangement in short time. It insures a sufficiency of food so that the weight of the infant is considerably increased during its treatment. The chief benefits of the food are a reduction of fermentation in the intestines, and a substitution for it of putrefactive changes leading to the characteristic calcium soap stools, and with cessation of diarrhea, and a gain of weight."

Referring to Lactic Acid Milk, Sherman and Lohnes of the Children's Hospital, Buffalo, N. Y.,*** report pleasing results in eight months work on difficult feeding cases. On a special series of about 25 cases tested on Lactic Acid Milk, these specialists make the following summary: "The effect on the stools is marked and quickly obtained. The foul putrefactive odor, so common in this class of hospital case, promptly ceases, and the stools become even, smooth and of good color. The infants seem rapidly to become less toxic as is shown by the disappearance of various signs and symptoms."

*American Journal, April, 1913—Diseases of Children.

**Archives of Pedriatics, July, 1916.

***Journal of American Medical Association, October 2, 1921.

These gentlemen assign the following probable reasons of the betterment of condition:

"The acidity seems to stimulate both the gastric and the intestinal function and the sterilization of the protein fermentation of the intestinal canal is marked. This change of intestinal state markedly lessens the absorption of toxic products and the whole process of metabolism is hence beneficially affected."

Possibly the most applicable piece of investigational work available on the reasons for the benefits of the use of Lactic Acid Milk was done by Heineman who reaches the following conclusions in his study of the Germicidal Effect of Lactic Acid Milk:*

1. Some of the acid tolerant cells of B. Coli may survive the presence of 0.6 per cent lactic acid in milk. B. Dysenteriæ, B. Typhosus, B. Diphtheria, B. Paratyphus and the spirillum of cholera in these experiments were destroyed by the presence of 0.45 per cent lactic acid. It is possible that serums of these bacteria exist which are able to resist a greater amount of lactic acid.

2. Acid tolerant strains of B. Coli, B. Dysenteriæ, B. Typhosus and B. Paratyphosus may multiply in the presence of quantities of lactic acid which are destructive to the majority of cells. The smaller the initial amount of lactic acid, the more likely the growth of acid tolerant strains. Consequently, the slower milk sours, the greater danger of pathogenic bacteria surviving.

The dispensary of the Wake County Health Department started operation on the 15th of June, 1921, and discontinued on the 2nd of October of the same year. During that interval, approximately 400 gallons of milk was manufactured. 105 cases suffering from intestinal disturbances were placed on lactic acid milk by the local specialists, and starters were given out to persons living in the county to bring the total number of users up to 125. The quantity consumed varied considerably, the following table showing the periods of time over which the consumers called at the dispensary for the milk:

Used only once	27	25.7 per cent
Used 1 to 5 times	34	32.4 per cent
Used 5 to 10 times	16	15.2 per cent
Used 10 to 25 times	14	13.3 per cent
Used 25 to 50 times	9	8.6 per cent
Used 50 to 75 times	4	3.8 per cent
Used 75 to 100 times	1	1.0 per cent

Of the individual consumers, one family used 89 quarts; others 70, 67, and 66 quarts, respectively. These large individual consumption figures were due to the fact that it was largely used as a prophylactic after correction of the disturbance occurred.

The dispensary was self-supporting and showed a balance at the end of the season in spite of the fact that over 300 quarts were given

*Journal of Infectious Diseases, May, 1915, page 479.

away to charity cases. The dispensary was open each day, including Sunday, and the milk was called for, being paid for at the rate of 20 cents a quart.

The manufacture of Lactic Acid Milk, while it has its attending difficulties, is a relatively simple process. It consists of inoculating with a pure culture of starter, the milk which has previously been pasteurized, and ripening same under consistent conditions of temperature until it is judged ready, breaking up the curd, working into a smooth body, bottling and dispensing.

The commercial starter as mentioned above, and used by the Wake County Health Department, was secured from the Bulgaricus Milk Ferments Company of Baltimore. Their culture consisted of pure strains of the Bacillus Bulgaricus group, and ordinary lactic acid milk organisms. To our observations, these cultures were of exceptional purity and virulence, and splendid ripening was obtained in their use as later tabulations will show. It is characteristic of both of these groups that they are lactic acid producers, although the curd produced by the B. Bulgaricus group is softer than that produced by the B. L. A. group, and its action is probably not so rapid. The tendency of the Bulgaricus group is also to prevent wheying off of the finished product, a condition which adds highly to the value of the product.

Our process of manufacturing the lactic acid milk was as follows: The milk used was skimmed milk, testing around .05 per cent fat, from tuberculin tested cows. The milk was delivered in bulk early in the morning and was immediately pasteurized on a gas plate, the temperature being run up to at least 180 degrees F., the milk being continually agitated to prevent scorching and to get efficient pasteurization. Twenty tests on the efficiency of this method of pasteurization taken during the season showed a reduction on the average of over 97 per cent of the organisms that would reproduce on nutrient agar in 48 hours at 37½ degrees C. After pasteurizing the milk was immediately cooled down to about 70 degrees F. and inoculated with a quart of starter saved from the previous day's batch and the whole run was placed in a 37 degree incubator. In guaging the ripening process, it was our custom to watch the development of the curd carefully, taking the milk from the incubator, cooling and corking it up at the time when we considered it had ripened sufficiently. As a check on the acidity of the milk dispensed, titrations were made at various intervals during the dispensing season, with the following results:

Per cent acid in milk as dispensed: 1.04; 1.08; 1.12; 1.17; 1.08; 1.12; 1.12; 1.12; .90; 1.08; .90; .81; .90; 1.08; 1.12; .94; .90; 1.08.

The great range of difference in acid content as shown by these figures at its greatest extremities was only .34 per cent, ten of the titrations lying within .10 per cent range. It is noted here that the acid content ranges well above the figure set by Heineman over which pathogenic bacteria are usually destroyed.

During the season, the question arose as to the development of acid in the home under ice-box conditions. In order to study this question, the following series of tests were made, specimens being held under home conditions in the ordinary ice-box, titrations being run at 24 hour intervals:

TABULATION

Series "A"	Series "B"	Series "C"
Aug. 19 .90%	Aug. 20 .81%	Aug. 21 .81%
Aug. 20 .90%	Aug. 21 1.08%	Aug. 22 1.17%
Aug. 21 .94%	Aug. 22 1.44%	Aug. 23 1.21%
Aug. 22 Fermentative odor and whey	Aug. 23 1.48%	Aug. 24 1.53%
	Aug. 24 Fermentative odor and whey	Aug. 25 Fermentative odor and whey

Series "D"	Series "E"	Series "F"
Aug. 22 1.08%	Aug. 23 1.12%	Aug. 25 .90%
Aug. 23 1.12%	Aug. 24 1.12%	Aug. 26 1.12%
Aug. 24 1.17%	Aug. 25 1.21%	Aug. 27 1.26%
Aug. 25 1.21%	Aug. 26 1.26%	Not carried further.
Aug. 26 1.40%	Aug. 27 1.31%	
Aug. 27 Fermentative odor and whey		

No milk was saved over from day to day for dispensing purposes. Users of the milk were cautioned not to use it after 24 hours, and as far as known, did not. The above tabulations suggest that it undoubtedly would be safe to use this milk for 48 hours if care is taken in refrigerating.

Questionnaires were sent to the doctors regarding the benefits of the product, no questionnaire being sent if the milk was only used once. Seventy-eight replies were received from these questionnaires with the following results:

Recovery	61
Beneficial	10
Refused milk	1
Not enough used	2
Marasmus	2
Complications, acidosis, death	2

PRACTICAL DEDUCTIONS

1. A Lactic Acid Milk dispensary is a practical adjunct to a health department in a city of over 25,000 population.

2. That, exclusive of salary of laboratory director, it is better than self-supporting.

3. That the demand for this product and the results obtained warrant the trouble incurred.

4. That pasteurization of raw product must be thorough; ripening conditions must be constant, and that the milk must be dispensed at a relatively consistent acidity.

5. Properly prepared Lactic Acid Milk should be good for 48 hours, provided proper refrigeration is given the product in the home.

DISCUSSION

Dr. A. S. Root, Raleigh: I want to thank Mr. Dearstyne, in behalf of the Section on Pediatrics, for having given us this excellent paper today. The Wake County Board of Health is doing a splendid piece of health work.

It seems strange to me that, as universally as lactic acid is used, more scientific observations have not been made upon it. Mr. Dearstyne has treated this subject from a scientific point of view. Several things have interested me very much in his paper. One point is the way in which lactic acid milk should be made. I feel that the method of making it has a considerable amount to do with the success of treatment by it. Mr. Dearstyne calls attention to the fact that it is made from a pure culture of the Bulgaricus and the lactic acid organisms. The milk will whey out unless there is sufficient quantity of the Bulgaricus Bacillus, so it is important to have the starters in proper proportion. After lactic acid milk has been run for about a week you have to renew the cultures, as otherwise it will whey out, since the lactic acid organisms outgrow the Bulgaricus.

Lactic acid milk, so far as the bacterial count is concerned, is practically sterile. All the specimens which the essayist examined contained only about one per cent acid content, which would guard the product against contaminating the intestinal tract. Another advantage is that lactic acid milk can be safely kept when properly refrigerated, for two days without any deterioration or fermentation.

An interesting point to me is the fact that this is the first instance I know of where a health department has undertaken this work. I believe that if other towns, even smaller towns, those of five or ten thousand population, would make lactic acid milk during the summer for babies with diarrhea, the mortality would be considerably decreased.

I had the pleasure of working with Mr. Dearstyne in this. Of the 125 babies suffering from diarrhea whom the Wake County Health Department supplied with lactic acid milk last summer, 115 were referred by me. This series of cases embraced all types of diarrhea. Only three of these died. This low mortality rate may have been and probably was partly due to the fact that in this community the intestinal infections were not as virulent last summer as they usually are, but I feel certain that lactic acid milk saved many of these babies, and hence was largely responsible for the low mortality rate.

Mr. Dearstyne, closing the discussion: There is not much more to say, except that I believe there is a big future in a dispensary of this kind, and I think the time will come when all of the larger cities

will maintain such a unit as we had last year. The people are very grateful for the fact that they can get this milk at any time, and they back it up.

RESULTS OF THE DIAGNOSTIC STUDY OF 1,000 CASES

A. A. Barron, M. D., Charlotte

I wish to present a summary by systems of 1,000 cases and, briefly, discuss some points of interest. Records and classifications of diseases furnish information valuable to advancing medicine. This review and study is intended only as an expression of an effort. For brevity, detail sub-classifications have been purposely omitted.

CLASSIFICATION

Sex, Male	541
Sex, Female	459

AGES

1-10	30
11-20	103
21-30	186
31-40	204
41-50	218
51-60	160
61-70	81
71-80	15
80-Plus	3

INFECTIONS

Arthritis, Chronic	38
Rheumatic Fever, Acute	8
Tonsilitis, Chronic	58
Tonsilitis, Acute	8
Pyorrhea, Alveolaris	71
Infection, Focal, Teeth	71
Caries, Teeth	45
Sinusitis, Frontal	6
Sinusitis, Maxillary	9
Syphilis	47
Mastoiditis	7
Influenza	6
Meningitis, Tuberculous	3
Meningitis, Cerebro-Spinal	2
Hook-Worm	1
Malaria	2
Typhoid	1
Amebic Dysentery	1

DISEASES OF THE DIGESTIVE SYSTEM

Adhesions, Intestinal		21
Appendicitis, Acute		2
Appendicitis, Chronic		6
Auto-Intoxication		8
Colitis		13
Cholecystitis		10
Cholelithiasis		7
Gastric Neurasthenia		25
Gastritis, Chronic		8
Hemorrhoids		31
Tumor, Malignant		5
" Stomach	1	
" Colon	3	
" Pancreas	1	
Ulcer, Stomach		1
Ulcer, Duodenum		2
Visceroptosis		81

DISEASES OF THE BLOOD AND VASCULAR SYSTEM

Anemia, Primary	3
Lymphatic Leukemia	3
Arterio-sclerosis	9
Aneurysm	9
Angina Pectoris	11
Aortitis	7
Cardiac Hypertrophy	126
Dilatation, Aortic Arch	35
Dilatation, Heart	39
Endocarditis	7
Hypertension	97
Hypotension	41
Insufficiency, Aortic	7
Insufficiency, Mitral	41
Insufficiency, Myocardial	65
Stenosis, Aortic	5
Stenosis, Mitral	13
Pericarditis	7
Phlebitis	7
Gangrene, Senile	2

DISEASES OF THE GENITO URINARY SYSTEM

Calculus, Renal	9
Cystitis	27
Nephritis, Acute	7
Nephritis, Chronic	76
Perirenal Abscess	2
Pyelitis	5
Uremia	13

DISEASES OF THE RESPIRATORY SYSTEM

Asthma		21
Abscess Lung		1
Pneumonia, Broncho		11
Pneumonia, Lobar		4
Bronchitis, Chronic		11
Acute Respiratory Infection		6
Emphysema		7
Tuberculosis, Pulmonary		59
" Active	15	
" Arrested and Fibroid	44	
Pneumothorax		1
Pulmonary Emboli		2
Pleurisy, Effusion		5
Pleurisy, Dry		11
Laryngitis		3
Pharyngitis		21
Nasal Obstruction		5

MALE GENITALS

Hypertrophy Prostate	29
Varicocele	35
Hydrocele	1
Epididymitis	7
Atrophy Testicle	7

FEMALE GENITALS

Uterus Displacements	31
Disorders, Menstruation	33
Laceration Perineum	21
Laceration Cervix	9
Cyst, Ovary	5
Fibroid Uterus	6
Salpingitis	3
Pelvic Peritonitis	3
Cystocele	4
Rectocele	3
Pregnancy	6

METABOLISM AND ENDOCRINES

Pellagra	11
Obesity	31
Diabetes Mellitus	18
Diabetes Insipidus	2
Hypopituitary	5
Hyperpituitary	1

Hypothyroid	17
Ovarian	11
Goiter, Simple	
Goiter, Adenoma	16
Goiter, Exophthalmic	9
Infantilism	1

DISEASES OF THE NERVOUS SYSTEM

Chorea	21
Epilepsy	37
Hemiplegia	23
Tumor, Cerebellar	2
" Pituitary	3
" Cerebellar Pontine Angle	1
" Brain Unlocalized	6
Syphilis, Brain	8
" Cerebro Spinal	5
" Spinal	5
Locomotor Ataxia	11
Syphilis of Nerves	5
" Congenital	6
Paresis	5
Hydrocephalus	3
Encephalitis Lethargica	3
Multiple Sclerosis	3
Paralysis Agitans	6
Cerebral Diplegia	1
Migraine	13
Facial Paralysis, Peripheral	16
Tri-Facial Neuralgia	2
Poliomyelitis, Anterior, Chronic	6
Amyotrophic Lateral Sclerosis	1
Progressive Muscular Atrophy	2
Spastic Paraplegia	3
Disseminated Myelitis	1
Transverse Myelitis	2
Cauda Equina Lesion	1
Syringo Myelia	1
Isolated Paralysis of Muscles	5
Multiple Neuritis	3
Neuralgia and Neuritis, Miscellaneous	16
Skull Injuries	4
Sciatica	31
Psycho-Neuroses	84
Neurasthenia 49	
Hysteria 11	
Psychasthenia 8	
Anxiety 6	
Psychosis	21

MISCELLANEOUS

Acute Alcoholism	6
Morphine Habitue	5
Tumors, Benign	13
Tumors, Malignant	9
Hernias	13
Skin, Miscellaneous	20
Mental Defectives	20

Our studies deal largely with chronic medicine. That there is a widespread lack of interest and pessimism concerning the possibilities of prevention of chronic diseases in the latter half of life in contrast to the optimism prevalent concerning the results accomplished in the prevention of acute infectious diseases in the early decade is evident. The acute infectious diseases have been so thoroughly exploited that today the time is opportune to attack the problem of chronic diseases on which already years of patient labor have been expended, but probably too little appreciated.

The pathology of a patient is often but the sum total of his habits, and the reaction of his body to them. Over-eating leads to obesity, and obesity predisposes diabetes; alcoholism to cirrhosis of the liver, etc.; pyorrhea, result of the neglect of the mouth, to infectious conditions.

In the study of diseases, local and systemic, the relation that infectious foci may play in the production of disease has been well established. It is well to recall that all foci, whether or not producing symptoms, are sources of potential danger; that chronic inflamation secondary to acute manifestations may be the result of localized infection in the tissue; that bacterial endotoxins may cause disturbance of certain functions and tend to hypotension, anemia, bronchial asthma, and vasomotor disturbances of the skin and gastro-intestinal symptoms.

Viewing our study of the gastro-intestinal tract as a whole, we find visceroptosis of the stomach or colon or both in eighty-one (81) cases a most common condition. The frequent resulting symptoms were: digestive disorders, vague abdominal pain and occasionally symptoms of bladder irritation, constipation as a rule, neurasthenic symptoms were frequent. Exercise to suit the patient, a well fitted corset, sleeping with the bed elevated and the necessary dietetic correction furnish the best solution for management.

In the consideration of abdominal pain, spondylitis and tabes must be considered. Four (4) cases of neuro-syphilis had had abdominal operations without results. A diagnosis of chronic appendicitis is usually wrong because in the majority of instances no pathology is found on removal, and also for the reason that the patient is not benefited.

Because of its location, position and association with surrounding structures, the gall bladder frequently presents symptomalogy most

difficult to interpret. Gastric and duodenal ulcer, carcinoma of the stomach, appendicitis, pancreatitis, and kidney conditions may yield symptoms that simulate those of the biliary tract. Non-surgical gall bladder drainage is a useful diagnostic and therapeutic aid.

The old method of extracting the stomach contents for stomach analyses about one hour after meal was found to be as satisfactory as the fractional method excepting when necessary to differentiate a mere delay of acid secretion from a true achylia gastrica. Ten out of sixteen (16) analyses in cases suffering with secondary anemia showed a deficiency of hydrochloric acid. Hypochloridia is a frequent accompaniment of anemias and is an important point to remember in treatment. The result of sixty feces examinations were negative except in two instances.

Secondary anemia was present in sixty (60) cases. There were three cases pernicious anemia and three cases of lymphatic leukemia. Transfusion of citrated blood was found very beneficial in the marked secondary anemias, and of only temporary benefit in the primary anemias.

Cardio-vascular cases are quite common. There were sixty-five (65) cases of myocardial insufficiency—syphilis the etiological factor in three. Arteriosclerosis present in one hundred and fifteen (115) and is frequent without hypertension. Fifty-four (54) cases of definite valvular lesions, thirty of which were mitral insufficiency, twelve mitral stenosis, six aortic regurgitation and stenosis.

Of the ninety-seven (97) hypertensive cases fifty-four (54) were males and forty-three (43) females. Fifty-one per cent of the males and fifty-eight per cent of the females were under fifty years of age. Six of the females in this group presented thyroid adenomatous-like enlargement. With the exception of moderate increase in pulse rate no evidence of hyperthyroidism was found. Anxiety and apprehension were their chief subjective symptoms. The high-frequency current and rest act splendidly in this type of case. Hypertension in itself is compatible, even when extreme, with many years of comfortable activity. With the exception of over-eating in general, diet has no known influence on hypertension. Moderate outdoor exercise is the most important therapeutic measure for hypertensive cardio-renal cases. Even if there is dyspnea on considerable exertion exercise in moderation is beneficial. Tobacco in moderation does little harm, alcohol is injurious.

In the nephritic case the various renal tests often reveal serious disturbances in renal function not suggested by other features. They have, however, their limitation and careful clinical consideration must always be given. The phthalein output is probably the most valuable functional test. Given intravenously it gives more accurate information than intramuscularly. Using the two at different intervals, accepting the difference as an index, it gives a rough idea as to the efficiency of the heart muscle. In the early chronic cases it may show but little, if any, diminution. Blood chemistry, more especially creatinin, is of prognostic value. Blood urea fluctuates too much to be of extreme

practical value. Persistent low specific gravity fixed within three or four degrees is a bad sign. A retention acidosis is frequently present in the advancing nephritic, in acute exacerbations, and terminal stages.

Mainly, through mistaken diagnosis, that is confusing myxedema with nephritis, especially nephritis with edema, thyroid extract has gained some notice in the treatment of nephritis. In myxedema we find some of the general appearances of nephritis and usually there is diminished renal functions. Also, there is a lowered metabolism in myxedema and in nephritis with edema metabolism is usually lowered. The writer has had one very interesting case previously considered a nephritic, relieved of her symptoms by thyroid extract.

There were fifteen (15) cases of active pulmonary tuberculosis. Two cases of pulmonary emboli, one following appendectomy, the other occurring in a case suffering with femoral phlebitis. The two cases of metastatic carcinoma of the lungs were secondary to cancer of the breast. Careful examination of the lungs should be made in all cases suffering with carcinoma. Two cases of bronchial asthma, resulting from the secondary effects, were relieved by the removal of the foci of infection.

There were eighteen (18) cases of diabetes mellitus. Blood sugar studies furnish valuable aid in determining the severity and prognosis and is very valuable in differentiating renal glycosuria from true diabetes.

To differentiate the simple neurosis from the mild cases of hyperthyroidism is frequently difficult. Tremors and tachycardia do not necessarily mean hyperthyroidism. The general appearance of the patient is a most valuable index. Of the functional tests, Basal Metabolism determinations, if properly interpreted, are valuable.

Headache, (referring to migraine and migrainous-like headache) is therapeutically unsatisfactory. The carbohydrate and protein intake was investigated and studied without result in our cases. Artificial menopause has been recently produced in two cases with the hope that relief might be obtained. The writer has had no experience with the use of salt injections, which have been recently advocated, for the purpose of reducing the intracranial pressure.

Syphilis is a frequent etiological factor of organic nervous diseases. There were eight (8) cases involving the brain—five (5) classified as cerebro spinal—five (5) as spinal—five (5) involving the nerves—twenty-one (21) as belonging to the late degenerative processes. The spinal fluid in neuro-syphilis, more particularly the vascular neuro-syphilis as represented by thrombosis, hemorrhage, etc., occasionally gives a negative Wassermann.

Brain tumors are not uncommon. Twelve cases, while numerically small, represent a fairly large proportion considering the general run of cases observed in private practice and consultation. Symptomatology and neuro-logical findings were sufficient in six cases to justify localization—two received excellent results from operation. Convulsions, especially localized headache, nausea and vomiting, disturbance of locomotion, speech disturbance, disturbance of vision, paralysis of

eye muscles and limitation of the field of vision occurring in a previously healthy person should make us think of a possible brain tumor.

Of the epilepties, twenty-four were classified as grand mal, eight as petit mal, three as Jacksonian and two as pituitary in origin. The latter were relieved by pituitary extract. There were twenty-one cases of chorea.

A diagnosis of sciatica was made in thirty-one cases. No case of sciatica is properly studied without X-ray examination of the lower spine and sacro-iliacs. Occasionally diseases of the spinal cord present symptoms of sciatica. The caude equina case had been treated several years for sciatica.

There were eighty-four (84) cases placed in the psycho-neurotic group. These cases, always difficult to handle, frequently do not receive the treatment to which they are entitled. Not infrequently they are subjected to unnecessary surgery, females in particular. The frequent lack of interest and attention shown such cases has done more to open the gateway to the osteopath and chiropractor, and contributed more to his success than his advertising or ability to relieve.

Instruments of precision such as the X-ray, fluoroscope, and electrocardiograph—the Wassermann test, spinal fluid studies and other laboratory aids of a fine technique are invaluable and indispensable; but should be considered clinical aids and not clinical dictators. The fluoroscope is a most valuable aid in the study of chest and gastro-intestinal tract, and, as has been said by one writer: "It is to the medical man what the knife is to the surgeon."

DISCUSSION

Dr. D. Heath Nisbet, Charlotte: There are three points I want to make. The first is that it does not seem to matter what subject we are especially interested in, for this paper shows we must be pretty well up on every subject in medicine and surgery. The second is in regard to gall bladder drainage. Certainly there is something to it as a diagnostic and theurapeutic aid. In over 400 drainages we have gotten very good results where everything else failed. The third is in regard to analysis of the stomach contents. I think that in all cases where it is at all possible we should do a fractional gastric analysis. Very often we see cases come in with a diagnosis that has been made, either by the patient or by a physician, of hyperacidity. Very often the matter regurgitated tastes acid, but often there is very little acidity. Very often you will see a case where the acidity runs along low for two hours, and then very suddenly it shoots up. Fifteen minute specimens should be taken for two hours, taking the first specimen one hour after the test meal. The Mayo clinic does not use the fractional method when free hydrochloric acid is present in the first specimen.

Dr. R. McBrayer, Sanatorium: I want to state that the fractional analysis has a definite advantage over the other. There are two things you can learn by the fractional method which you cannot

learn nearly as well with the other. In the first place, you learn what the stomach is doing so far as secretion is concerned, which you cannot learn so well with one single specimen. In the second place, you learn what the muscular side of the stomach is doing better than with the other method. If you cannot do the fractional method, do the best you can in place of it, of course.

In Dr. Barron's list, under infections I see the word meningitis, and after it is written the word tubercular. We who are doing work in tuberculosis would rather see the word tuberculous. Tuberculous means something caused by the tubercle bacillus itself. Tubercular means something nodular. We have tubercles on bones, but there are no tubercle bacilli there.

As to hookworm, we are running between two and three per cent hookworms at the Sanatorium, where we are doing routine examinations. Here there is only one case in a thousand.

As to secondary anemia, we had a patient admitted some time ago. She did not do very well. We examined her blood and found indications of a mild primary anemia. We examined her for hookworm and did not find it. We kept on and kept on, and made several examinations. In about a month we found a more marked picture of primary anemia, and also found hookworm ova. Instead of diagnosing that as a primary anemia, the anemia has been cleared up since we treated the hookworm infection. I do not believe we are looking for hookworm as much as we should.

In regard to giving phthalein intravenously, I think subcutaneously is a little better for the average man. I think the subcutaneous method decreases the danger to the patients, and the phthalein does just as much good.

I was very glad to hear Dr. Barron say that in nephritis we do not need to have hypertension. If you get a normal blood pressure reading, it does not mean that you do not have a bad chronic nephritis.

If you interfere with the formation of urea, you cannot get a high blood urea. As the Doctor says, you have to think about the patient, and if the laboratory results fit, they are all right.

In regard to the pleural effusions, they mean tuberculosis to us.

Ten and one-half per cent of the cases were diagnosed under psycho-neuroses and psychosis, and Dr. Barron said that he was probably not getting all the cases that came to him. Let me relate to you one case, and then I will sit down. There was a lady old enough to be my mother who had a gastric disorder for years. She had examinations by the best physicians in the eastern cities, and also had an examination by one of the physicians in a city near here. She went to Philadelphia, to the University Hospital, and had X-ray, barium meals, everything that could be done. Everything was negative. Then we took her back to Philadelphia and said we wanted Dr. Deaver to open her up. He found a carcinoma of the pancreas and two gall stones. And several months later my mother died of carcinoma of the pancreas because of a diagnosis of neurosis several years ago.

Dr. ————————: A man who goes to the trouble to make out a list of things like this, and a man who has reviewed the different subjects here between the last meeting of the North Carolina Medical Society and this one, is entitled to credit. I think that if every doctor in here—and I know I would include myself first—had reviewed things like this during the year, I am sure the personnel of the Society would be very much higher at our next meeting. I appreciate it. It is work, and it is individual work on his part.

Recently I have been studying some figures on nervous diseases. Dr. Barron has a pretty long list of them here. As it is our business so frequently, as some one said, to meet the neurotic in relation to the numbers that are knocking at the doors of our jails, almshouses, and institutions of every kind, we are in a particularly bad way in that respect. I was thinking, when Dr. Faison said something about castration in a case he has, of a remark made by some one, that if we do not look after a lot of the imbeciles and run-down folks in this country, there would not be enough well ones left to take care of the crazy ones. I am glad that remark was made, because we feel, in justice to society, we do not want them, we do not need them, and I think we should consider more and more making that one the last of his line.

Dr. R. F. Leinbach, Charlotte: Dr. Barron's paper represents a great deal of work. He is approaching his cases from a new angle. I should unhesitatingly say that it is a very instructive procedure to stand off at a distance and view our cases as a group with reference to the results we are accomplishing in order to get a proper perspective. We must bear in mind there is an inherent factor of error in the practice of grouping cases, because the individual element becomes submerged. However, if we would check our results, we must employ the method which Dr. Barron has used.

Dr. Barron has made a daring statement, viz: that the diagnosis of chronic appendicitis is usually a mistake. That statement is by no means so radical as one Dr. Cabbot has made on this subject to a group of 100 post-graduate students two years ago. He said, "There is no such thing as chronic appendicitis." Let us consider who are the people whose appendices are coming out for chronic appendicitis. In our cities we may find a large per cent of the women of the so-called better class, well-to-do, well nourished, overeaters of carbohydrate, constipated, neurotic, with frequent bilious spells, aching in back and legs and head, and not infrequently a low grade temperature, a history like this is typical: In 1916 tonsils were removed because of aching and question of rheumatism. In 1917, under suspicion for sacro-iliac disease, because of pain and tenderness in lumbar spine. In 1918 under observation for tuberculosis because of slight temperature day after day. In 1919 under suspicion for pelvic disease because of dysmenorrhea. In 1920 the surgeon says it is a case of chronic appendicitis and removes the appendix. Does that end the story? No. The next year the chiropractor or osteopath has his inning at this case.

The surgeons remove the appendices and tell us that it was too long, too short, kinked, twisted, retrocecal or what not. These are not terms of surgical pathology. They are explanations offered as the immediate justification.

Let us have pathological examinations made of the appendix when we have it removed for so-called chronic disease, and let us stand or fall by the laboratory examination. If these cases show chronic changes in the appendiceal tissue and if this chronic inflammation caused their ailments, these patients have a legitimate right to think that their symptoms will disappear when the appendix is removed. If there is no pathology in the appendix which a pathologist can find, let us tell them that the operation will not benefit them.

Dr. William Allan, Charlotte: There is a great deal of value in going over our past work after a year or two, to find out what we did. Nothing gives us better orientation. It is a great help.

In reviewing any one else's work, we naturally compare it with what we see ourselves, and it gives us both comfort and discomfort. Nothing comforts me more than the low percentage of gallstones. Evidently other people have as much trouble seeing gallstones as I do. Probably there should be seven per cent, instead of seven-hundredths.

I presume the thirteen cases of migraine were found in the people who came in with that as the presenting symptom. My impression is that fifteen to twenty per cent of the population have migraine, if you take time to get the history.

I am struck by the lack of orthopedic cases, bone cases, in the summary. I cannot imagine thirty-one cases of sciatica, and I think some of them must be bone lesions.

I am very much interested in Dr. Barron's remarks on diabetes. It seems to me that this is a good heavy percentage. He has emphasized the necessity for getting the blood sugar, which must be brought down to normal. Without blood sugar examinations we shall get badly stung on the occasional case of renal glycosuria which has been treated for diabetes. I have recently seen a case which has been treated for diabetes for eighteen years, and which is not diabetes at all, but renal glycosuria.

I think that the large number of nervous cases is quite explicable by the fact that Dr. Barron is interested in neurology.

I have recently been confronted with the problem of making the diagnosis of uremia. It is very difficult to make this diagnosis. We still seem to have no criteria on which to base the diagnosis of uremia, and there is no safe way to be sure the patient has uremia.

Dr. Barron, closing the discussion: I wish to thank you gentlemen for discussing my paper. No doubt, it contains quite a few errors. The presentation of a paper with so broad a classification, a detailed classification not being possible, is of no more value than the discussion it creates.

In answer to Dr. McBrayer's question in regard to pleurisies. will say that they were all considered tuberculous. Unfortunately, they were not sufficiently worked out from a laboratory standpoint.

As to the psycho-neurotic group, a diagnosis of psycho-neurosis was made only in the event where no findings were found to justify another diagnosis. I always doubt this diagnosis. There are very few people who complain that have not something really wrong.

Not included in this series, were 500 or 600 ex-service men studied during the past two years. For the study of symptomatology and their clinical applications, I know no greater field.

I agree thoroughly with Dr. Leinbach's remark about chronic appendicitis. My statement was rather drastic and intended to be.

Dr. Bradsher, Chairman: It has not been long since chronic appendicitis was a great hobby, and all of us were making diagnosis of chronic appendicitis. It would be a good thing if we could get rid of our hobbies and not make new ones.

VALUE AND POSSIBILITIES OF BREAST FEEDING

Yates W. Faison, M. D., Charlotte

Artificial methods of feeding have recently occupied such a prominent place in medical literature, perhaps our attention has, to a degree, been distracted from the best, the most obvious and natural method of feeding the infant, namely, natural nursing:

The knowledge of the importance of breast feeding in combatting infant mortality is rapidly growing in this country. The records of the Minneapolis Board of Health for the year 1918 show that there were 8,689 births for that year. Of these babies 301 did not survive their second week, 100 more did not survive their second month and 628 died in their first year. Looking for some common factor in this large percentage, we find that in the United States, according to locality, the death rate is from three to nine times higher among babies who have never been nursed, or, if nursed, only for a short time. In Berlin, in the years from 1900 to 1904 only 9 per cent of the infant mortality occurred in breast fed infants. In Boston in 1911 there were 621 deaths from diarrheal diseases in babies under one year of age. Of these 534 were breast fed. Of infants reaching the age of two weeks, 1 in 5 dies before it is one year old if bottle fed, while if breast fed, only 1 in 30 dies. The statistical results of breast feeding are vastly superior to those of artificial feeding.

In view of the facts, it plainly become the duty of someone to teach every mother that she can and must nurse her infant—this duty must necessarily fall on the shoulders of the obstetrician, because of his association with her during the pre-natal period, and

in addition to his usual instructions as to pre-natal care, he should assure the mother of her ability to nurse, and even more to insist that it is the infant's inalienable right to be breast fed, and that the mother who fails to make every reasonable effort is derelict, and is robbing her child of its best opportunity for maximum growth and development—these facts must be so indelibly impressed on the mother's mind that when the infant arrives she feels that she must institute and maintain breast feeding at all hazards. Occasionally we find mothers who are unwilling to nurse their babies, but fortunately this is a rare occurrence, even among the upper classes. The desire of the mother to be relieved of the trouble and confinement incidental to nursing is not a sufficient reason for resorting to the bottle. Such competent observers as Sedgwick and Griffith assure us that physiological failure of lactation is practically an unknown condition. It seems quite reasonable to assume then that if the proper psychological attitude of the mother be attained, that in nearly every case can breast feeding be successfully instituted.

Successful lactation rests to a large measure on the observation of a proper régime and nursing technique. I will not attempt to go into the minor details, but will mention some of the more important points. The fundamental requirement is the breasts should be completely and regularly emptied. Sedgwick has shown that lactation can be increased, prolonged, or re-instituted after a period of rest, by correct manual manipulation. If no demand is made on the breast, such as nursing or expressing the milk, the supply will disappear the stimulation from sucking is the best known galactagogue.

Regularity of the nursing intervals cannot be too strongly stressed—the baby has a better appetite and digests the milk better. Opinion as to intervals of nursing varies. I believe the older plan of two hour feedings is too frequent—I suggest the two hour interval for the first week or until the milk supply is well established and then change to the three hour interval—the four hour interval may be used where there is an abundant rich milk or in the case of a rapidly gaining robust infant—a great number of the difficulties encountered during the first month or two are due to too frequent and irregular feedings. So the régime of regular and complete emptying the breasts at three hour intervals and for 15 to 20 minutes duration is the best.

The habits of a nursing mother should not be necessarily changed if her former manner of living has been a reasonable one; a normal amount of exercise is always advisable, as too many mothers confine themselves indoors too closely, become nervous and overwrought watching the baby too closely, and so are likely to get into an unhealthy condition.

Much investigation has failed to reveal any very direct or important influence exercised upon the milk by the nurses' diet, although it has been generally held that the composition of the milk can be so influenced. Occasionally acid fruits or highly seasoned

vegetables may produce a sudden disturbance of digestion in nursing babies, but there is no need of abstaining from green vegetables and acid fruits in the vast majority of cases, although many women have the idea that these are injurious to the baby. The diet should be rational, simple, well-balanced and not too excessive—the mother should be permitted to eat anything she desires within reason, and if any particular article is found to upset the baby, it should be omitted from the diet. The plan of giving large quantities of milk, cereal gruels, cocoa and other liquids between meals is erroneous, as this quickly takes away the appetite of the mother for her well balanced diet at her regular meals. A considerable amount of liquids is necessary, but a quart of extra liquid food, say a glass of milk with each meal and one at bed time, plus the normal 24 hour intake of water will prove sufficient in most cases, but the point is stressed that it is the increased liquid per se and not the increased liquid food that is important. The mother should be warned that excessive nervous disturbances, excitement, or violent emotions may produce a marked alteration both in the composition and the amount of the milk—the even, quiet tempered woman makes the best nurse, the highly nervous, highly strung mother gives us one of the hardest nursing problems to cope with.

As important as it is to nurse the baby, yet there are some definite contra-indications: 1. Tuberculosis of any form in the mother. 2. When the mother is very delicate and weak, or is suffering from some serious chronic disease, such as cancer, chronic nephritis. 3. Any serious complication of labor, such as sepsis, hemorrhage, eclampsis, or nephritis, generally disqualifies the mother. 4. Chronic nervous disorders. 5. Pregnancy, but here the weaning should be slow and not abrupt.

Then there are a number of doubtful contra-indications. Often times it takes a nice piece of judgment to decide whether nursing should be continued in the acute infectious diseases, such as pneumonia, typhoid fever, influenza. I believe that if a mother is to be acutely sick for more than a few days, the baby should be taken from the breast, both for the sake of the mother and the baby. The mother needs her whole strength and resistive powers to combat the disease, and it seems to me that the baby runs more danger of going wrong if nursing under these conditions is kept up, than if the baby is put on a successful artificial feeding; we may use Sedgwick's plan of manual expression of the breasts during the illness with the hope of re-instituting the breast feedings during convalescence. But each individual case must be decided according to the circumstances.

Such difficulties as inverted or cracked nipples are generally overcome by proper measures and do not call for weaning.

Menstruation undoubtedly disturbs both the composition and the amount of milk, but this is over in a few days and nursing should be continued.

An altogether too frequent reason is that the mother's milk does not agree with the baby, that the baby has colic, cries all the time, vomits or regurgitates, has frequent undigested movements. Except in the rare instances where the milk is really injurious to the infant, some remediable cause can be found. A careful investigation will disclose that in most instances, either the method of feeding has been faulty or the correct habits of hygiene and diet are to blame. Correct these errors and the majority of babies who are brought to us for this complaint can be kept on the breast.

Then we see occasionally the woman who is unwilling to nurse her infant—such a mother deserves very little respect and the doctor who will assist her to institute a substitute food deserves less.

Again we have the frequent reason that there is an insufficient quantity of milk, too poor milk, or the baby does not gain. One or two examinations of a mother's milk tells us very little and are of very little value, and are being used less and less. Fritz Talbot of Boston, has shown that not only does the milk differ in composition at different periods of each nursing, but that it also differs in quantity and quality at different times of the day and night. So weaning should certainly not be advised on milk examinations alone,—again, a baby is weaned because the mother's statement that she has not sufficient milk, is taken without the conclusive evidence obtained by weighing the baby before and after every feeding for at least 24 hours. Just so, the weight chart must show definitely that the infant is not gaining. If the infant is not gaining and it is found in the above manner that there is an insufficient milk supply, the baby should by no means be weaned, but complemental feedings sufficient to make up the deficiency should be given immediately after each nursing. With careful attention to the mother and manual expression of the milk after nursing to completely empty and stimulate the breast, her milk can be frequently again raised to an adequate quantity, so that the complemental feedings may later be discontinued. Experience has shown that the complemental feeding, or the addition of artificial food after nursing, is much to be preferred to the supplemental, or substitution or alternation of artificial feeding for breast feedings. The supplemental plan is the surest method of further diminishing the quantity of milk secreted, because if no demand is made on the breast, as nursing or expressing the milk, the supply will disappear.

I should like at this point to put in just a few words of warning against this premature and ill-advised weaning of so many of these infants during the first few months of life, for which trivial reasons as colic, the mother's milk does not agree with the baby, insufficient quantity, frequent and undigested stools, cries all the time, does not gain, etc., without a judicious and conclusive investigation. Most of these difficulties can be overcome by a careful adjustment to a proper régime and nursing technique of mother and infant. In these difficulties of the early nursing period, before weaning is decided, it is just as important to consult with a pediatrician as it

is to consult a surgeon in a case of appendicitis. There is absolutely no age of weaning. This depends on the condition of the mother and supply of milk, and the progress and development of the child.

The advisability of not too long continued breast feeding is just as important as nursing long enough. Too frequently infants are seen whose progress and development have been retarded or stopped between six and nine months, because of too long continued maternal nursing of an inadequate milk, which could easily have been prevented by proper complemental feedings. A certain number of infants should be weaned at six months, the majority at nine months and all certainly by the twelfth month. The practice of nursing longer than the twelfth month is out of the question. When weaning is definitely decided on, it should be done slowly and not abruptly, unless absolutely necessary.

In conclusion, I should like to emphasize these points:

1. Maternal nursing is the best means for combatting infant mortality during the first year.

2. Every mother should have it impressed upon her mind during the pre-natal period, that she can and must nurse her infant to obtain the maximum growth and development of her baby.

3. There is too much premature weaning for trivial and remediable difficulties. This should not be done without judicious investigation.

4. When additional artificial feeding becomes necessary, the complemental, rather than the supplemental plan should be used.

I have not attempted to bring anything new in this paper, but my intention is merely to remind that, notwithstanding the great advances that have been made in the knowledge and uses of artificial feeding, no equal substitute has been found for maternal nursing and that every effort should be made to give to the young infant the benefits derived therefrom.

DISCUSSION

Dr. J. E. Kerr, Winston-Salem: Breast feeding is my hobby. I just want to get the central thought in Dr. Faison's paper home to everybody—and it is this: Artificial feeding of infants has made wonderful progress in the past ten years. In the hands of expert pediatricians it has meant the saving of life of untold thousands, but it should never supersede (only in very special cases—even in the hands of experts) *breast* feeding. I want to say to every doctor in this presence that if he is expert enough to secure a wet nurse, or if this is not possible, to secure breast milk for one child during this year he will have proven himself a worth while doctor. He may never attain the distinction of being an expert in artificial feeding

of children but he will sign one less death certificate in 1922. If you want to save *one* baby this year secure *one* wet nurse.

Dr. J. Lab. Ward, Asheville: Dr. Faison has given us a very practical paper. There are a great many things recommended for increasing the supply of milk. Pituitrin has been recommended. I attempted on one or two occasions to inject a solution of the mother's milk subcutaneously. It will make the breast fill almost at once, but the twenty-four hours' supply is not increased.

One thing was not stressed by Dr. Faison, although it might well have been. If the mother desires to nurse her baby, but feels that she is unable to do so, her fear of being unable to nurse it will act to decrease the milk supply or cause it to disappear altogether. The remedy is an assurance from the physician that she will be able to nurse the baby. If the physician is positive, and removes the doubt from her mind, why you will find the milk supply increasing. Just reassure her. In the meantime, of course, let us make sure that the baby is not getting enough milk, which we can do only by weighing the baby before and after each nursing for the twenty-four hours. If the baby is not getting enough, by all means supply the deficiency by some formula, using it after the breast feeding. Tell the mother that you are using only as an emergency ration, and that just as soon as the milk comes you expect to discontinue the artificial feeding. In most cases it will work.

Another thing I want to stress is this: I think very often an analysis of the mother's milk does harm, because we draw false conclusions. Often the mother demands it. You may find too much sugar, or too much fat, in the sample. We can not draw conclusions from that. The milk varies from hour to hour and from day to day. If we get twenty-four hours' supply of milk from a given mother and have it analyzed one day a week for two or three months, we might get results of some value, but unless we can do that we had better do away with the analysis altogether.

NON-SURGICAL BILIARY DRAINAGE

D. Heath Nisbet, M. D., Charlotte

If the value of a new method can be measured by the amount of comment it causes, and the number of men who investigate its claims, then surely non-surgical biliary drainage can take its place in the front rank of things worth while.

As you all no doubt know, it was S. J. Meltzer who made observation, that the local application of a 25% solution of Magnesium Sulphate directly to the duodenal mucosa, would cause a relaxation of the duodenal wall and with it the sphincter of the common bile duct, or Oddi's sphincter. He called attention also to the law of contrary inervation, whereby stimulation of the splanchnic nerves of the duodenum caused relaxation of the sphincter of the common bile duct and simultaneously contraction of the gall bladder.

Vincent Lyon worked on this suggestion and from it elaborated his method of biliary drainage. His first paper, published in 1919, was a review of one thousand drainages and the result of over two years of careful work. He had convinced his associates that the method possessed great possibilities in both the diagnostic and therapeutic field.

Even at the risk of repeating something with which you are already familiar, I will give the technic in some detail. The patient presents himself in the morning, having fasted twelve hours. The mouth is cleansed and the ordinary Rehfuss tube is passed to the stomach. The fasting contents are removed and set aside for later study. The stomach is washed clean with sterile water. The patient drinks four ounces of boiled water, lies down on the right side, and is instructed to swallow the tube to the duodenal mark, and to take twenty minutes to do so. The duodenal mark is usually five to six inches below the point from which the stomach washes. At the end of twenty minutes the tip of the tube should be in the duodenum. The simplest test to use, is to let the patient drink some water, and if it does not return in the tube you can be reasonably sure that it has gone through the pylorus. The duodenal contents are aspirated and then 75 cc of a one-third saturated solution of magnesium sulphate are run in slowly and immediately allowed to drain back. The bile obtained can, in many cases, be separated into three portions. First, the A or common duct bile, golden yellow in color and clear. Second, the B or gall bladder bile, a bit darker and more viscid. Third, the C or liver bile, lemon yellow in color. These portions are studied microscopically and cultures made where necessary.

There has been a great deal of discussion as to whether the B bile is from the gall bladder, and while we have no experimental proof that this is true, Lyon and many others think they have proved rather conclusively that it must come from the gall bladder.

The literature on this subject has been rather voluminous, but in reviewing it an attempt will be made to cover only those articles appearing in the last eighteen months. W. O. Johnson (International Abstract of Surgery) concludes, "that the gall bladder does not contract and empty itself, following relaxation of the sphincter of Oddi, for the five following reasons. First, the test can be repeated at least four times at frequent intervals. Second, at no time was the gall bladder found empty or seen to empty. Third, the difference in pressure between the gall bladder and cystic duct—only ten to thirty mm. of water—is insufficient to cause a forceful contraction. Fourth, the intermittent flow of bile from the gall bladder bears a relation to the respiratory movements and is not definitely connected with the contraction of the gall bladder. Fifth, if the gall bladder is filled with methyl blue and the bile is observed during digestion, no blue stain is noted in the bile except when the gall bladder is mechanically pressed. These experiments were made on

dogs and the element of fright must be considered, also where the abdomen is opened there is interference with the normal nervous mechanism.

Harer, Hargis and Van Meter conclude from their experiments on dogs that the gall bladder is emptied of its contents by pressure of adjacent, distended and congested organs during digestion and by the milk action of duodenal peristaltic waves and say further that the rhythmic contractions of the gall bladder are of no importance.

Einhorn thinks that the color changes in the bile are due to the different strengths of magnesium sulphate used, but it is the belief of Lyon that he has misinterpreted his findings. In other cases surgeons have introduced the tube before operation, and after the patient is etherized, and the abdomen opened, have instilled the solution, and seeing no contraction, have concluded that the method is of no value. But it is a well known fact that a general anaesthetic cannot be considered successful, until there is inhibition of intestinal peristalsis and total relaxation of abdominal musculature, and surely under these conditions, the application of a stimulus to duodenal mucous membrane could not be expected to act normally. On the other hand, Sachs has observed, in incompletely anaesthetized individuals, that the local application of magnesium sulphate with early withdrawal produces a definite, visible dilation of the viscus, and contraction of the gall bladder with outpouring of liver and gall bladder bile.

Smithies, et al., say that it is the most important single procedure available for the working out of liver and gall tract anomalies. Lyon has published an exhaustive study of one hundred consecutive cases with excellent results. Levin, Simon and Friedenwald, in separate papers, have endorsed its use in diagnosis and treatment, while Brown and Whipple have reported its use in pre-operative diagnosis in surgical cases.

In writing of a new method we are apt to stress its good points and leave out its bad ones. This method is not put forward as a panacea of all ills but has its very definite limitations. All will admit that all gall bladder cases are not surgical, and further, that a large per cent of operated cases are not relieved. This gives us our chance. We aim at the pre-gallstone period with its atonic and dilated gall bladder and static bile, before or after infection has set in, when the symptoms are mainly gastric and always before stones have been formed. We believe, with many others, that frequent drainage and many stimulations during each drainage, will tone up the gall bladder musculature, make it contract and empty its contents and in this way rid itself of static bile and the tendency toward later trouble. In catarrhal jaundice it is the method of choice. Where the gall bladder has been removed or merely drained and infection remains, it offers the best chance because the surgical object can be attained, it can be drained indefinitely, or as often as necessary. In the rheumatoid conditions, in cases of migraine, where

no other cause is found, in the old chronic cases, we often find a hidden infection of the gall bladder with brilliant results from treatment.

Now as to its limitations. It is of *no value* where gall stones are present. For it has been shown by others and is the experience of the writer that with cholelithiasis the bile is similar to normal bile. Where there is obstruction of the cystic or common duct from outside causes as tumor, cancer, etc. We have seen no positive results in cirrhosis. There is another type of case that is greatly benefited. In neurasthenic patients it makes a tremendous impression to see all this bile and all will admit that any means is justified in this type of case.

In my own series of cases I wish to present a few facts gleaned from 125 cases on whom 400 drainages were made. Thirty-eight were drained only once. Thirty were drained twice. Thirteen had three. Twenty had four each. Six had five each. Six had six each. While nine had seven to twelve.

Fifty-three cases representing 225 drainages were clinically cured or permanently benefited. Twenty-six cases representing 95 drainages were not benefited in any way. The cases improved were from the following conditions: catarrhal jaundice, cholecystitis (early), cholangitis, duodenal and duodenobiliary catarrh, headaches and migraine, and a few who had complaints too numerous to mention.

In conclusion let me make these points: First, that duodenobiliary drainage has made a place for itself in the diagnosis and treatment of liver and gall bladder disease. Second, it is the treatment of choice in catarrhal jaundice; in atonic and dilated gall bladders where stasis exists; in post-operative cases where the gall bladder has been removed, or drained, and where infection remains. Third, this method has definite limitations and offers no relief where gall stones are present. And fourth, that much study and experience is necessary to determine what further possibilities are latent in the Lyon-Meltzer method.

DISCUSSION

Dr. R. McBrayer, Sanatorium: I want to thank Dr. Nisbet for bringing this paper before us. Of the few papers that present the good and the bad side, his paper is one. Another advantage in this procedure is that we can use it in the office. A nurse can do this, after a few months' practice, or the office girl, just as well as the doctor can do it.

I would like to ask Dr. Nisbet if, when he withdraws the duodenal contents, he puts each withdrawal in a separate test tube. I surmise that he does, in order to note the color change.

As to putting the tube in slowly, I think that is essential. It is mighty nice to have the fluoroscope handy, so as to see the shape of the stomach. I would like to ask also if he puts in the tube through the nose or the mouth. It is easy in either way.

If you have sterilized the upper intestinal tract as best you can and have withdrawn a specimen and have it cultured and an organism is reported, we, as medical men, have to be careful when we say that it came from the gall bladder. We cannot, in my opinion, sterilize the upper part of the gastro-intestinal tract with anything less than will do definite damage to it. We ought to be careful in drawing conclusions from a laboratory report.

Yesterday I heard it said that even if the patient gets an apparent cure, we must not forget that chronic cholosystitis is a very serious predisposing cause of duodenal ulcer. We must not forget to think surgically if we do not want to predispose our patients to duodenal ulcer.

Dr. A. A. Barron, Charlotte: The post-mortem statistics on gall bladder involvements are so much greater than the living statistics show, anything we do in the way of further work along the line of investigating gall bladder, is worthy of greatest consideration. Dr. Nisbet has been kind enough to do quite a few drainages for us and, in several instances, beneficial results were gained.

Dr. Nisbet, closing the discussion: In regard to Dr. McBrayer's question about the duodenal contents, we attempt to get those out and look them over and see what we can find in them.

About the cultures, we have not made as many cultures as we should have done. It is astonishing, in cases where you do not make any attempt to cleanse the stomach except by water, how often you will get a sterile content. As to the colon bacillus, I do not believe that the fact of its being there has anything to do with it.

Dr. Smithie, in the 1800 drainages he reports, says that in 900 cases he studied the average time of the appearance of bile. In only one case was it under two hours, and in the great majority of cases it was over six hours. Now, we very rarely take over thirty or forty minutes to get the bile. I think the quicker you can get it down, the better, because the patient does not want the tube in the mouth and stomach so long.

We put the tube in through the mouth, because we use the Lyon type. I know of only one case in which we were unable to get the tube down by using cocaine locally or some other method.

GYNECOLOGY AND OBSTETRICS

Owen Moore, M. D., Charlotte, Chairman

Dr. Owen Moore, Chairman: For a number of years the profession in North Carolina has somewhat neglected the branch we represent here today, but that period has passed and there is a marvelous awakening to its importance in progress now. At no time in the history of North Carolina medicine has gynecology and obstetrics received the attention it is demanding now, witness the Weeks' maternity bill, our own maternity department at Raleigh, the numerous societies for study and teaching of gynecology, prenatal care, and better obstetrics. On my way up here to Winston I was struck by the increasing number of schools and educational institutions we passed, showing the great strides this State is making in education and enlightenment, and my companion remarked, "These are what is making North Carolina great," and he was right, but we of the medical profession must not permit other professions, sciences and vocations to outstrip us. we must press forward step for step with them. Especially is it true of this particular department of medicine, we must strive to bring it abreast with other branches and kept it there.

Dr. C. M. Strong, Charlotte: Just one foreword. I heard a doctor who had traveled all over the United States say that, as a body, the doctors of North Carolina were the best average of any State in the Union, and as far as surgery goes, they stand well that way, but that we are behind in diseases of women and obstetrics. That was his conclusion. So I think it is up to us in the State of North Carolina to build up the gynecological and obstetrical part of our society, because nothing is good enough for the women of our State, in whom the future of our State is wrapped up. The average physician and surgeon does not and cannot devote the special attention to women that we think they ought to have. I think the difference between a surgeon and a gynecologist lies in this fact, that the surgeon does the operating part, and he examines a woman just as he does his male patients, and then operates on them as he does on his male patients. But we think a woman requires an additional safeguard before she passes into a surgeon's hands. I do believe that there are too many women operated upon, because in our experience of say one hundred cases, probably only fifty per cent are operated on, and most of them are supposed to come in there for this purpose. But after eliminating the non-surgical and risky cases, we reduce it down to practically fifty per cent who require operation. Now, we find that you do not cure altogether fifty per cent, so that forces us to the conclusion that an operation on a woman is not going to cure her every time, hence cases should be thoroughly sifted before operation.

A great many of these cases clear up by office and medical treatment. I am a surgeon, but at the same time we find that we must

hold in check a great many of these cases, even in pelvic infection. For some reason often you send them back and treat them a while and we are surprised to find they come back later practically cleared up. I tell you, we must all advance this specialty in North Carolina because of its great importance.

Sometimes it does not matter whether you kill the old man or not, but it does matter whether you kill the old woman. They can get along without the old man, if necessary, but they cannot get along without the mother. So, it is our problem to conserve womanhood in North Carolina, to keep from operating if we can, by proper post-natal care, and to operate judicially when we have to operate. And for that reason we are presenting this paper, not that we are over-conservative, but our experience had demonstrated to our satisfaction that it is a big study. I am glad to see that we have as many here as we have today, but we ought to have a great many more doctors in this Section.

Don't misunderstand me that I am decrying surgery, because it is often the only curative measure, but I do decry meddlesome, unskilled and especially unstudied surgery in women.

AN ANALYSIS OF PRESENTING SYMPTOMS IN PELVIC DISEASE

Oren Moore, M. D., and C. M. Strong, M. D., Charlotte

After a number of years spent in treatment of diseases of women we have found it interesting to discover, if possible, how much of significance as to final diagnosis there is in the presenting symptom, and when the treatment is finished and the patient discharged whether the predominating symptom has disappeared or is still present. We, therefore, undertook an analysis of the cases which applied at our clinic for treatment, and from that analysis we have selected 100 average cases to report on. It might be said in the beginning that the reason for selecting 100 cases is found in the fact that it makes percentages easy to arrive at, and we believe it is large enough number from which to draw our conclusions. Further, we wish to state that the majority of our work is for the average woman citizen since the extremes of society do not come into our offices. The very poor, or charity type, we treat elsewhere, the very wealthy, or idle rich class must be treated elsewhere, and by other physicians as well, for we never see them. The first conclusion, therefore, is that the 100 cases here presented represent about the same social and economic status as those treated by most of you gentlemen.

Twenty-six (26) of this 100 came in for other than pelvic disease, i. e., they were referred by diagnosticians for routine pelvic examination, or desired treatment for some other ailment, 6 were found with retro-displacements, 2 had beginning cervical cancer, 1 a fi-

broid tumor of the uterus and 1 a cystic ovary—while 14 showed more or less cervical infection. From this group we draw two conclusions,—that certain well marked pathological conditions in the pelvis give such slight symptoms that the patient is unaware of their existence, but most important of all it points to the value of routine pelvic examination of women, particularly in the child-bearing age.

Dysmenorrhea heads the list of obvious symptoms for which relief is sought. Of this 100 cases, 21 came in for this cause. Examination shows the following etiological factors:

Ante-position	7
Retro-displacement	4
Chronic pelvic infection	5
Ovarian disease	1
Ureteral calculus	1
Uterine myoma	1
No discoverable cause	2

The conclusions from this group is very evident and first shows the overwhelming predominance of the anti-flexion type. It might be said in passing that operative procedure was undertaken in 6 of these cases, only 3 of the anti-flexion going to surgery, the Pozzi operation being employed twice and Strumpdorf's cervical amputation once. In all three operative cases the results were good, in two retro-flexion cases Hodge's pessaries were used for relief. One retro-flexion case was operative by Gilliam suspension, and the chronic infection cases are still under observation.

Leucorrhea is the presenting symptom in 8 cases, but it is an accompanying symptom in 42. Of the 8 in this class 6 had marked cervical involvement, 2 showed acute vaginitis and 1 had both cervicitis and vaginitis of undiscoverable origin and long duration. She is still under treatment and has been for eight months. The conclusion here is also obvious, that is chronic cervical infection is very common and is a disturbing symptom to the patient, especially if she be a woman of refinement and personal neatness, even though pain and physical discomfort is not present. Results in these cases are hard to obtain in our experiences unless the patient will agree to amputation of the cervix. Three of these series did agree and the predominating symptom disappeared,—of the remaining five, four were discharged with some improvement, one as stated above is still under treatment.

Amenorrhea: 12 cases came in for this symptom, 6 proved to have physiological basis of pregnancy, 4 were secondary anemias from pulmonary T. B. or chronic nephritis and gastric ulcer, 1 was endocrine origin and 1 had a complete stenosis of the cervix and an immense hæmatometria following forcible delivery of eight months previous. The conclusions here are the converse of those drawn from the first section—that is that many general diseases produce

pelvic symptoms which are of more significance in the patient's eyes than the original disease. It further shows that half of the anemias are physiologic in origin, and that the Elder Emit was eminently correct in his axiom "Remember this woman may be pregnant."

Backache was a presenting symptom in nine, but was an accompanying symptom in twenty-two. Of the nine comprising this list four had marked retroflexion of heavy uteri, three had retroflexion of small uteri, two had general ptosis with decided nephroptosis, one showed a sacralization of the last lumber verterbra, one stone in kidney and one cause not discovered. Of the four retro-flexions three were operated by shortening methods or by hysterectomy, one was treated by pessary—the kidney stone was removed, the ptosis cases treated by braces (a measured and fitted corset). Of these four were completely cured and three relieved when discharged. (Note: Sacralization case.) We wish to make conclusion from this class that backaches, while very frequent, are not as incurable as it is sometimes thought. Further, that all retro-flexions do not cause backache and that all women with backache do not have retroflexion, but we do conclude that all women with backache believe they have retro-flexion and it requires considerable skill to make them changes their opinion.

Pelvic and Abdominal pain: Eight in this class and the location of the pain is variable, but as a rule is found in lower right and left quadrants, and the patients generally refer it to their ovaries. It is likewise variable in type,—in some it was dull and throbbing, in some sharp and acute. Of this number four had chronic tubal infection, one acute tubal disease, two ovarian cysts, one sub-acute appendicitis. All of these cases went to surgery and when discharged all were relieved. We conclude from this series that real pelvic pain accompanied by tenderness, localized or general, is a valuable diagnostic sign, is usually directly significant and usually disappears with the removal of the pathology. In this group, however, is not included that large number of vague pelvic aches and discomforts, bearing down sensations and other symptoms and congestion which so frequently annoy the female of the species, and which by the way was an accompanying symptom in 62 of this 100 series.

Dysuria: In ten cases this was the predominating symptom. Six were acute cystitis, one a uretheral carbuncle, one stone in bladder, one an acute uretheritis and one pressure from a large uterine myoma. Of this number all recovered by medical or surgical treatment. Conclusions from this series is that a dysuria is a significant leading symptom which also disappears with the removement of the pathology. It is also observed, however, at frequent painful micturition, is fairly usual in pelvic disease as an accompanying symptom, since 22 of the 100 complain of it. At most, however, it is transatory and requires little attention. When it appears as the leading

complaint, or the chief complaint, it always demands prompt and thorough investigation, and the patient will accept no other.

Hemorrhage: In this series bleeding was a presenting symptom in only two cases, one of these was an incomplete abortion, and one a degenerating uterine fibroid with a polyp in the cervix. In both of these the bleeding was acute and persistent to the point of severe anemia, and was such a leading symptom as to bring us squarely to the diagnosis without difficulty. Both disappeared with appropriate surgical treatment. This small number permit of no definite practical conclusion, but when we discover that 12 other cases presented some accompanying bleeding, and when we find that these 12 includes menorrhagia, metrorrhagia, spotting and streaks we believe that bleeding is a frequent symptom in pelvic disease and should be thoroughly investigated since cancer, tumor inflammations and abnormal pregnancies will show this symptom.

Dyspareunia: Predominating symptom in two, analysis shows inflammatory conditions of the vaginal tract or cervix, in one, prolapsed incarcerated ovary in one. Treatment for the inflammation brought partial relief to the first—removal of the ovary gave entire relief in the second, but the dyspareunia was followed by persistent frigidity, which in our opinion was psychic in origin, and which has not been relieved.

General conclusion as a summary of this analysis, we believe that a fair percentage of gynecological cases per se give no predominating or leading symptoms of their disease, and on the other hand a reasonable large percentage of women complaining of pelvic symptoms are in reality suffering from other systemic or functional disorders, and the pelvic disease is largely mythical or insignificant, that this being true the gynecologist should be reasonably well equipped as a general practioner in order to recognize and treat properly all cases applying to him, that a portion of probable gynecology cases will be referred to the general practitioner and specialists in other lines, that a guarded prognosis as to complete eradication of the predominating symptom should be made as it will not always disappear when the real disease is cured, that pelvic symptoms are often misleading, that rigid and careful examination of the patient as a whole, as well as the generative tract is nowhere more imperative than in the branch of medicine known as gynecology.

PREVENTIVE GYNECOLOGY

H. S. Lott, M. D., Winston-Salem

Preventive appendectomy, presented in a former paper, considered conditions originating in embryonic life, whereby formative membrane, failing in resorption, perpetuates throughout life's cycle constricting and immobilizing bands beyond the point of tolerance.

Gynecology means not ablation or distortion of organs, but conservation of the procreative function of womanhood. Function is the

soul of the human economy, giving to each organic structure the power of procreation and the spirit of perpetuation of its kind. Just as the glint of the morning sun gives life to mountain top and ocean, so function reflects the vital glow of the procreative organs. Preventive gynecology, therefore, may fairly deal with all causes, both intrinsic and extrinsic, which either shorten or block the vital currents essential to physiologic performance of such function. Chief among intrinsic causes is infection; and infection may be classed under two heads, the ones that are inevitable, coming in the natural course of events in the period of girlhood, and the ones that may be avoided throughout all periods of life by prudence and cleanliness.

Chief among the first, and of much importance because they are inevitable, are the exanthemata, all of which, through the ravages of their inflammatory process, sear the pelvic cellular structures, and distort the delicate anatomic arrangement of the pro-creative organs. Thus the tubal fimbriæ, which should "float free" when the maiden stands erect—like the fish's fins in water—become agglutinated to the surface of the ovary, with the inevitable result of blocking normal circulatory currents and abolishing function.

We know about it, but have we thought about this delicately beautiful and highly sensitive mechanism; the floating fimbria, and its spasmodic clasp of the ovary, and how serious a matter this agglutination of structure, with lessening of the lumen of the tube, will become in the life cycle of young womanhood, and how often the effort is made to correct this pathology, and relieve this pain, by removing the appendix; thus creating fruitful soil for reflex scar tissue neuroses instead?

And again, at the menstrual epoch, have we framed a mental picture of the ovary with its product just matured and rising to its surface, here to rest a little while in its clean transparent fluid, before rupture of the capsule, which permits it to be caught within the spasmodic clasp of the fimbriæ and started on its journey through the tube? The end of this journey is the uterine cavity, and failing to find its mate, in the course of its travel, the ovarian product is swept away by the monthly storm, via nature's drainage conduit, or, meeting its mate, before reaching the uterine cavity, an ectopic gestation is begun. The old pelvic hematocele, shrouded in mystery, was nothing more or less, than a ruptured ectopic gestation; in keep of the pelvic cellular structures.

Knowing a thing, and realizing it, are quite different. We know that this anatomy exists in the female pelvis, and we have learned to recognize its gross pathology, but have we thought about it, and come to realize that these structures are far more delicate, and far more sensitive, and far more vital, because of their dual pro-creative function, than are any other organs in the economy; and that mental, social, and atmospheric conditions, in this the maiden era of effulgence, are equally causative in the initial shock which disturbs currents and perverts function?

With marital relations established, assuring also the era of functional activity, the woman confronts again the dangers from infec-

tion and trauma, but chiefly of external origin. The Neisserian infection, with an established pathology that is recognized and removed, is not the only one confronting woman through marital relations. If the affectionate and aggressive husband upon returning to the home, would take a bath—first!—the pelvic organs might be spared invasion by the mixed infection, from which agglutination of structure, with localized pus foci, and abolition of function, are far more fixed and fatal, than from the Neisserian alone. Gonorrhœal pus tubes, pure and simple, may be lifted, with ease, from their bed in the pelvis; but in pus conditions from a mixed infection, tubes and ovaries are welded to the pelvic floor in an agglutinated mass of cellular structures, from which their freeing involves much surgical shock and trauma.

Obstetrics is surgery, demanding the same perfection of toilet and technique; and while trauma, at times, is unavoidable, through disproportion between the maternal outlet and its passenger, *infection is not.*

The normal cycle of labor, beginning with conception, requires time and patience for safe completion. And how beautiful it is, the delicate, almost imperceptible contractile function of the uterine muscle tolerating to its limit of endurance. Ideal obstetrics means the conduct of labor to safe termination, with no interference at all; and the man who has not the patience, and will not give the time to the woman for safe delivery, should not practice this branch of the service, in which two lives are at stake always, and in which many of the accidents are due either to ignorance or indifference on the part of the accoucher. Forceps are life savers, but they are used too often, and used as a matter of expediency, forgetting the menace they bear to the maternal outlet and the fœtal head. Extensive tears, with destruction to cervix, posterior vaginal wall, and sometimes sphincter as well, while distressing and often unnecessary, are recognized, and an effort is made at repair; but please remember that the trifling ones, just a break in the mucous membrane perhaps, offer avenues to infection just as sure and just as inviting for invasion of pelvic cellular structures, with all of its distorting results. The severe cases, with rigors and sweats, covering a critical period of weeks, and ending either in a fatality or a pus focus, are so evident in their origin that "he who runs may read," but the mild infections, with just a slight rigor within the first week, perhaps with a longer period of convalescence, and failure to furnish milk the most marked clinical features, are insidious and fatal to function and fatal to physical comfort afterward.

In these mild post-partem infections, the pathology is much like that of the exanthemata; invasion, with slight effusion perhaps, of pelvic cellular tissues, congestion of Fallopian tubes, with complete or partial occlusion of lumen, and agglutination of its fimbriæ to the surface of the ovary. Thus function is abolished and sterility established, that cannot be accounted for because of normal marital relations.

Post-puerperal sterility, its cause and surgical treatment, presented in a former paper, describes more fully this pathology; picturing its clinical history, with abolition of function; and also suggests a surgical procedure by which the patency of the tube is restored, and the fimbriæ freed from the surface of the ovary.

Recognition and mechanical repair of injuries to cervix, posterior vaginal wall and perineal structure concern the obstretrician very closely. Plastic surgery today is not given the prominence to which it is entitled. For this there are two reasons, first, it is less attractive, demanding much time, care and precision in toilet, technique and material, if ideal results are obtained. Second, *it tells on us!* Much clumsy, and unnecessary work may be done through an abdominal incision, and the patient remain in blissful ignorance of the fact; but a distressing cystocele, a lax posterior wall, or a torn sphincter, breaking down the first time the woman goes shopping, is a living and lasting monument to the man who assumed the responsibility of its repair.

The sub-involuted, post-partem uterus occurs more often than we realize, and its baneful effects are assured. But please let us remember the importance of the uterus, and especially in this the era of functional activity. For four reasons it should not be removed; two of these reasons are anatomic, or mechanical, and two are physiologic or functional. The uterus is the keystone to the arch of the pelvic cellular structures, and the living room in the pro-creative center; and, most important of all, it is *the organ of menstruation*, and *nature's drainage conduit.*

May I tell you something, illustrating the attitude of the people, and emphasizing the importance and responsibility of our service? One morning, just seated in my office, a gentleman entered with his wife, a young woman of fine physique, having arrived from an adjoining county on an early train. Approaching me at once, he said, "Well, Doctor, we have decided to have our womb taken out." "Certainly," was my reply, "be seated, take it out while you wait." In a nearby town he found the service demanded, and is now a festive widower.

The uterus is the most intelligent organ in the economy, if given a chance; and the subinvoluted, post-partem uterus, if bled freely from its endometrium and the woman kept quiet for a while, will return to normal size and tone, preserving throughout the era of functional activity the integrity of the pelvic cellular arch, and the organ of menstruation, with its most essential function as nature's drainage conduit; and, in the literature of today, we find promise of the recognition of function as the most important factor in the human economy.

Retrogression of vital currents, with atrophic changes, subsequent to this era, completes the life cycle of womanhood. Such changes, with abolition of function, are in nature's plan, and, being inevitable, we may depend upon them. *As the come and go of circulatory currents throughout the eras of effulgence and functional life, under control of cerebral centers, establish and perpetuate functional ac-*

tivity, with its periods of rest; so the cycle is closed by the recessional wave, and with atrophy of organic structure, when its terminal duty is done.

Gynecology means safety and comfort throughout this the final era of woman's life; and with recognition of these facts, and the adoption of these principles concerning trauma and infection, with present day toilet and technique obstetrics will become preventive gynecology; and the gynecologist, the man with high ideals, of altruistic mould, upon an established plane of distinctive service.

"When the great Ship of Life surviving, tho' shatter'd, the tumult and strife * * * Of earth's angry element—drives safe into port, and the 'last bill of health' is demanded, its reading will show * * * How fared the ship through the trials she pass'd? And—What is the state of the ship at the last?"

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DISCUSSION

Dr. Moore, Chairman: Gentlemen, a very excellent and scholarly paper is before you for discussion. I think Dr. Lott is to be congratulated.

I shall ask Dr. Henderson Irwin to open the discussion.

Dr. Henderson Irwin, Eureka: I did not get in the room in time to hear the beginning of this paper, I am very sorry to say, but some of its points I certainly agree with in the art of obstetrics. We cannot be too careful in our care of obstetrical cases, either with our technique or our good judgment of the time required or the suffering permitted.

I read with a great deal of interest a short while ago an article condemning pituitrin. Personally, I am a great believer in pituitrin in the proper hands and used with the proper care and at the proper time. I do believe that it is used in too big a hurry. A doctor runs in to see a patient, and he has something else he wants to get to, so does not give the mother the proper attention, and is too eager to use pituitrin and rush things on, and maybe apply forceps. This hurry, all too often, produces injury to the patient herself at the time, and to the reproductive organs, which may not amount to much at the time, but may prove detrimental and quite serious in after years. I think it is our duty to exert every possible care and attention in taking care of the reproductive organs, the uterus and its appendages and accessories, when we can do so without endangering the life of the mother or of the baby.

Dr. C. L. Sherrill, Statesville: I think the sooner we do better obstetrics and make better routine examinations of the child-bearing woman, the sooner the mortality from cancer will be lowered. In a great many cases it comes on and gives no symptoms until a few weeks previous to inoperable condition. I think if we can succeed in preventing this we can accomplish a great deal.

Dr. C. Banks McNairy, Kinston: In looking over the statistics I am struck with two things: one is the number of children that are the first born, as stated on the application blank, and the other is the number of children that were instrumentally delivered.

Dr. C. M. Strong, Charlotte: As the Chairman said, the paper is a literary gem, and it gives us many things to think about.

In the main I agree with Dr. Lott, and I believe that, as I said before in open session, the conservation of womanhood is the prime object of the physician, and that, of course, if you prevent female diseases, you will not have to treat them. The main trouble is that we do not get a chance to prevent in a great many cases, but I am sure that we should be impressed with the fact that we can do more really than we do. We do not seem to think, when we are waiting on a woman for any causes, that we are trying to prevent anything, we are trying to cure something, and as physicians we are prone to think that if we prevent a thing, before long we shall not have many patients. We must get that out of our heads. We must prevent, as well as cure. When we have a woman patient we have potentially the future race in our hands. We need more Dr. Lotts in our State.

Dr. J. R. Alexander, Charlotte: I am sorry that I did not get in in time to hear all of this paper. I understand that putuitrin has been mentioned. There is no doubt that it is a very valuable drug, but it is one that is misused a great deal. This is a very busy and hurried age in which we are living. Oftentimes a doctor goes on an obstetric case, and if the mother is not delivered in a few hours he feels that he has to use some interference, as instruments or pituitrin. One mistake we physicians often make, I think, is staying by the patient the entire time. I think the patient would fare far better if we would leave her alone a while, not stay around her so close. It is really not a crime for a woman to be delivered without a doctor being present, and some times there is not as much danger of her being infected if we are not there, and very frequently we are in the way, especially in a private family. After a doctor has been practicing for a certain length of time he ought to know how the case is progressing and to be able to look after his other patients. Now, when the last stage comes and the head gets down upon the perineum or the os is fully dilated, after the pains have stopped, pituitrin is then a very valuable drug, but the idea of giving it to hurry labor I think should be condemned.

Dr. Lott, closing the discussion: Replying to a point Dr. Strong made, we cannot prevent them all, but we can keep on trying. I just want to emphasize to you, and to him, the pleasure he gave me in his opening remarks on the subject of gynecology, to find that he and I have been thinking along similar planes of cleavage.

THE ADVANTAGES AND METHODS OF MAKING LABOR EASY

Ivan Proctor, M. D., Raleigh

Suffering during labor is the worst that the human race has to endure. It is the same as that resulting from actual cutting and irritation of nerve filaments, in surgery and labor alike it produces shock and exhaustion. In labor it lowers resistance, increases the chances of infections, doubles the numbers of forceps operations, prolongs the puerperium, and in general raises the morbidity and mortality of childbirth. Shock and exhaustion are both reduced to a minimum in surgery by the use of anesthetics and the elimination of pain. Why shouldn't the parturient woman be given the same relief and protection as the surgical patient? Our (1) modern civilization with its higher educational standards and more protecting and environment has developed a type of nervous system that is very susceptible to painful impressions. Thirty years ago Lusk (2) warned us that: As the nervous organism loses in its power of resistance, as a result of higher civilization and artificial refinements it becomes imperatively more necessary for the physician to guard parturient women from the dangers of excessive and too prolonged suffering.

Today the most reliable statistics show that we are losing nearly one per cent of parturient women and ten per cent of the babies. Warrick (3) and Bailey having demonstrated that 40 per cent to 50 per cent of the infants that go to autopsy have intra cranial hemorrhage. Such authors as Kroenig, Polak, Davis and DeLee agree that labor is physiologic in its object but that it is actually pathologic in a large number if not in a majority of cases.

I feel that something should be done to protect modern women against the destructive forces of childbirth, and the most sane method of doing this is to eliminate pain and too prolonged suffering.

There are many advantages derived from making labor easy. First it robs motherhood of its terrors and eliminates both shock and exhaustion. It reduces the chances of sepsis, by clean technique, diminished suffering and shortened labor. The chances of cerebral hemorrhage in the child are lowered by lessening the time of forcible compression of the head. Post maturity dangers are forestalled by inducing labor before signs of disproportion develop. The fetal mortality is lowered by controlling the voluntary muscular action of the patient and timely interference. Finally the strength of the patient is preserved, the puerperium is shortened and the convalescence more complete.

The preparation of the patient is a very important step in making labor easy. It cannot be accomplished at the time of labor, but must consist of a thorough study and detailed care throughout pregnancy. Such attention furnishes for labor a well balanced healthy subject from whom all fear and dread has been removed and in whom confidence has been established. Reports from Boston (4) show that proper prenatal care reduces the number of stillbirths 50% and the infants' deaths 65%.

The most direct method of making labor easy is by means of anesthetics. King (5) claims to have used local anesthesia with success. He injects 1.5 cc. of a 2% novocaine in the superior perineal space and 5 to 10 cc. of a 1% into the ischio rectal fossa. We have three general anesthetics, all of which relieve pain with equal satisfaction, but there is a difference in their safety and practicability. Chloroform, according to (H. C.) Davis of Milwaukee, is the most dangerous on account of its destructive action to liver cells. Potter and others use it extensively and do not report ill results. Ether is usually the better anesthetic on account of its entire practicability, safety, and better relaxing power, which is important at birth. Nitrous oxide is probably the ideal anesthetic where relaxation is not required. Its objections are: it is more cumbersome to use, more expensive, more dangerous to the fetus if given continuously, and more immediately dangerous to the mother if not in the hands of an experienced anesthetist. I use chloroform and nitrous oxide in selected cases, but ether in the majority.

The time of beginning analgesia is determined by the amount of suffering and not by the dilitation of the os as recommended by some authors.

The most ideal anesthetic for the first stage of labor is morphine and scopolamine. This form of analgesia brings relief to about 90% of the women upon whom it is used. Kroenig (6) and Gauss of Freiburg use it only in a hospital where the obstetrician is in absolute control of the case. A dark quiet room being selected the patient is given a thorough examination and prepared for delivery. The initial injection of morphine sulphate Gr. 1/4 to 1/6 and scopolamine hydrobromide gr. 1/200 (using Mercks fresh steril solution) is given when labor is well established. The memory test, which consists of showing the patient an object, for example a pair of scissors, and repeating the exhibit in 30 minutes to see if she remembers having seen it, is used as a guide to other injections. If there is loss of memory the injection is withheld, whereas if the patient remembers having seen the object, 1/300 to 1/400 gr. of scopolamine is given. The number of injections vary, but usually good results are obtained with four doses. A well trained nurse must be in constant attendance and a physician available. As soon as the baby is born it is essential to remove it to another room so that the mother will not hear it cry, and probably reconstruct the entire labor. (8) Wakefield of San Francisco uses morphine scopolamine extensively, and gives gr. 1/6 and 1/150 at the beginning of labor. He uses Mercks crystalline scopolamine that has not been exposed. A half to three-quarters of an hour

after the initial injection depending upon the severity of the pains he gives scopolamine gr. 1/200 and the patient is soon under the influence of the drug. All subsequent doses depend on the requirements of the individual patient. Individual susceptibility and severity of labor pains both play a part in deciding the time of subsequent doses. There is no rule, the patient being given an injection when she needs it, and here experience is very helpful. In general it may be said that after the second dose 1/300 gr. is required about every two hours. The characteristics of a patient under scopolamine are flushed face, dry throat, dilated pupils and a partial loss of consciousness. There are many modifications of morphine scopolamine analgesia but it seems necessary for each man to work out a technique that gives him and his patients the best results.

I use it in the majority of cases, and give the initial dose of morphine gr. 1/6 scopolamine gr. 1/100 to 1/200 when labor is definitely established, and the patient begins to suffer. This injection usually puts the patient into a dazed condition with incoherent speech, sleep between pains and partial loss of consciousness. After labor progresses for an hour or more and the effects begin to wear off, the scopolamine is repeated using gr. 1/200 to 1/400. After the second or third dose the average patient will have reached the second stage when the morphine scopolamine can if necessary be supplemented with a whiff of chloroform during the pains.

(9) The memory test of Gauss is unnecessary and cannot be relied upon. Blue babies are unheard of if morphine is not given after initial injection. There is no definite prolongation of labor if the drugs are used just to relieve pain and the patient is not too thoroughly narcotized. This procedure, I believe to be the safest, most efficient, most useful and most important method of making labor easy. As Mocher (10) puts it, scopolamine is the greatest boon in obstetrics since the advent of anesthesia and asepsis.

The next important method of making labor easy is shortening the process. I am in sympathy with the principle of shortening labor in the individual case when there is an indication, but not as a routine. I believe too that the indications are far more frequent than our text books and some professors teach. Too severe or prolonged suffering is just as much an indication to shorten labor as is malposition or obstruction. Shortening such labor by skilled hands yields much better results than allowing the patient to drag on to completion by her own efforts. The method to be employed depends upon the individual case and the circumstances surrounding it.

The timely induction of labor is a means of shortening the process and making it easy, in that it prevents post maturity complications. Post maturity with a normal pelvis creates the same obstetric problem as contracted pelvis with a normal baby. To Reed (11) of Chicago we owe a great deal for developing the modern use of hydrostatic bags. Like other instruments, if improperly used, they may be a menace to child bearing women, but if skillfully used in the individual cases, it is a means of reducing maternal and fetal morbidity and mortality.

The prophylactic forceps operation described by DeLee (12) about a year and a half ago is a means of making labor easy. DeLee's technique is no doubt executed with success in his hands, but it is too radical for most men, and I know of no one who is using it as described. Many obstetricians do a prophylactic forceps operation in individual cases when nature is not making sufficient progress in delivering the child. The secret of success comes with gentleness and proper cephalic application, but most important of all is knowing when to interfere. If interference is too early the obstetrician does the damage, if too late nature does it. Important points in the operation are: absolute asepsis; surgical anesthesia; ironing out the vagina and perineum; accurate cephalic application; removal of the forceps as soon as the chin can be controlled through the perineum and the modified Walcher position. The cases that are best suited for operation are those that have reached the perineal stage. When it is necessary to apply forceps before this stage, the use of axis traction (13) instruments gives better results, in that they allow the head to follow the course which corresponds to the normal mechanism of labor.

Occipito posterior positions are one of the most common obstetric complications and cause a large percentage of prolonged painful and difficult labors. Bill corrects the malposition by a modified Scanzoni procedure and delivers with forceps. I have found Podalic Version using Potter's technique to be the best treatment in most cases, because the head often goes back to its original position after rotation and version must finally be resorted to. In many cases such as those where the head remains at the pelvic brim whether due to malposition or slight contraction, insufficient or misdirected pains and in toxemia where it is essential to have a quick delivery with a minimum amount of pain and shock, podalic version seems to be the best treatment. It has been my pleasure to spend a week with Dr. Potter of Buffalo and it would well repay any obstetrician to see him work. I am not an advocate of routine Podalic Version, but this form of delivery has a much wider field than we have been in the habit of applying it to.

The important features in Potters technique are: His absolute asepsis; surgical anesthesia using chloroform and the same anesthetist with all cases; relaxation of the perineum and vagina by the "ironing out" process and the modified Walcher position; rupturing of the membranes high up with retention of the aminotic fluid which aids turning; bringing down and delivery of both feet together; gentle extraction without haste at any time; delivery of the scapula before any attempt is made to deliver the shoulders; rotation of the posterior shoulder to the anterior position and delivery as such; the lack of external pressure until after the shoulders are delivered; slow delivery of the head in complete flexion, the patient in the modified Walcher position.

Davis (E. P.) summarized efforts at making labor easy by saying: "There is no logical reason why woman should suffer during labor. Suffering both physical and mental produces surgical shock. It in-

creases the danger of puerperal complications and delays convalescence. The suffering can be relieved with perfect safety to both child and mother."

The methods of shortening labor are sometimes called meddlesome midwifery, and for some men rightly so, but if we can do these operations without danger or with very much less danger to the patient than if we let nature take her course, then we must conclude that such interference is not only justifiable but advisable. Let every man be honest and recognize his limitations: for one man watchful waiting, for another analgesia, anesthesia and methods of shortening labor.

This is such a large subject it would require several hours to go into a detailed description of the different methods of making labor easy. However, I have tried to present the subject in a broad manner and hope that from the discussion we may gain something that will be helpful in our struggle for better obstetrics.

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DISCUSSION

Dr. James M. Templeton, Cary: I first used chloroform for alleviating the pain in childbirth, and I think yet it is the best anæsthetic of them all, though I like the scopolamine treatment. The way I got into using it was I am getting sort of lazy as I am getting older, and when the patient grunts during the pain she keeps me awake, and when I relieve the pain and she sleeps she gives me a chance to get my rest. It is a good preparation, and there is no question about its alleviating the pain and being a great thing. I know you gentle-

men know as much as I could say about it, and so I am not going to take up your time discussing it. Dr. Proctor has given us a good paper.

Dr. F. R. Harris, Henderson: I just want to ask a question. I have been practicing for over forty years, and the question I want to ask is what about the shortening of labor by the use of pituitrin?

Dr. C. Banks McNairy, Kinston: I want to say that my good friend, Dr. Stanly Whitaker, does more obstetrics than any other man in our city, and I also want to state that he does the whole job, and has the reputation of doing it well. I have been very much concerned along this line only. We are interested in mental sickness. Has any one made a sufficient study to give a definite answer or come to a definite conclusion as to the effect of these powerful drugs upon the central nervous system of the child and the mother?

Dr. H. S. Lott, Winston-Salem: There is just one method I will speak of. Knowing Dr. Potter personally and admiring him, I do not hesitate at all to say to this body just what I said to Dr. Potter at a recent session in Atlantic City of the American Association of Obstetricians and Gynecologists. It was this: "Potter, your version's fine, and in your hands, with your perfection of toilet and technique, no doubt you are relieving suffering and saving lives, but I cannot feel that out in the field, out in the open, among the men who do the world's work in obstetrics, without the training, without the possibility of grouping around them the toilet and technique, I cannot feel that it is safe." It has been my privilege a number of times to deliver women, in emergencies, in a very few minutes by version, but that it should be used in all cases, I cannot agree with Dr. Potter.

Dr. J. R. Alexander, Charlotte: I was very much interested in this most valuable and interesting paper, and just thinking about the podalic version. Its use is comparatively new, that is, it was not used to the great extent it is now used, say with men of my age, along in 1890. Then there was an operation that is scarcely ever used now, that did, to some extent, take the place of podalic version. That is decapitation. It was supposed then that you could not do a podalic version and save both the child and the mother in a posterior face case and decapitation was then the only thing that you could do. No one has heard of decapitation in years on account of the podalic version. Now, in a case where it has entered in the pelvis, comes the essential thing that Dr. Spicer mentioned, and that is anesthesia. That is the first essential thing in doing a podalic version. Podalic version is one of the biggest operations that is done, one of the most dangerous. It is far better, if possible, to get the patient in a hospital, where you will have thorough asepsis and a table on which to do it. Now, I have done a podalic version on a bed, but I am sure that any one who has done it will agree that it is a very hard operation, especially on the doctor, to do a podalic version on a bed.

The doctor mentioned also bringing down both feet at one time. That is very nice, indeed, theoretically, if you can do it, and you can usually do it where the membranes have not ruptured, but in the case where the membranes have ruptured, it is very rare that you can get both feet at one time. Then it is best to get one foot down, lasso it, and then get the other foot. I have noticed that it is much better not to have to rotate the child after you have brought it down. Therefore, I would suggest in catching the feet to bring down with the toes toward the hollow of the sacrum, and then it will be in the right position to deliver.

Doctor, I thank you very much, and I enjoyed the paper very much.

Dr. Joe H. Caldwell, Charlotte: I am not much of an obstetrician compared to those around me here, but I would like to say that I am not a very strong advocate of Dr. Potter's methods, except, as Dr. Proctor has said, I am strongly in favor of one initial dose of morphine.

Dr. J. S. Brown, Hendersonville: I am heartily in sympathy with the general proposition of anesthesia in obstetrics, but I have put together two or three of the remarks that I have heard in this room, and I feel that a note of warning should be sounded in the use of morphine. You are all familiar with the fact that infants bear narcotics badly. I think that a great many cases do not need anesthesia, and I think that infant mortality, since the introduction of the twilight method, is higher than it was before.

Dr. F. R. Harris, Henderson: I do feel as if I want to say something on this subject. My thesis forty years ago was written on version. I have performed this operation many and many a time, and it is a serious operation if you have not sufficient help. But what I do want to say is this—I do not believe in any particular method.

I was at a prayer meeting recently, and the preacher called on Brother Smith, and said "Won't you lead us in prayer?" And he got away down and then said, "Good Lord, give us the sense to keep in the middle of the road." I think that was a good prayer. Let's use common sense here. I believe in new developoments when good, but don't be bound by anybody or anything. A man of experience knows what is best under certain conditions. Use your own common sense, and in the last analysis, we must treat each case on its own merits.

I thank the brother very much for his paper, and I am very sorry that I could not hear it all.

Dr. Moore, Charlotte: The question of Potter's version is one that has interested me very much, and I am convinced of one thing which is that it will never be put in routine practice in the South. In looking over our own statistics in the hospitals in Charlotte and in my private practice I find that about 90% of dystocias are due to the errors in the position of the passengers. Also that we lose a

certain number of babies by forceps delivery and a certain number from brain injury in normal deliveries; certainly then, Potter's method would offer in these cases (faulty positions) no higher mortality than our present methods and probably no higher mortality than Cæsarean section. I admit that I am theoretically opposed to any procedure as radical as Potter's would seem, but on the other hand, I also admit that I am equally opposed to watching my obstetrical cases exhaust themselves in a more or less vain attempt to deliver themselves and finally demand interference by forceps.

Dr. Proctor, closing the discussion: I want to thank the gentleman for their free discussion of my paper. I have enjoyed listening to the points brought out by the other doctors.

I will first take up pituitrin. I do not think this drug has any place in the process of shortening labor. There is only one time when pituitrin may be used while the child is in the uterus. That is when the head is on the perineum (or what is left of it) and the pains have practically ceased. I think pituitrin is a very dangerous drug and kills more babies in the hands of the unskilled than anything else. I do think that pituitrin has a great use immediately after the second stage of labor. It is the best drug we have to help out the third stage. It seems to cause a clear and more complete separation with a minimum amount of bleeding. I repeat, however, that it is a very dangerous drug, the most dangerous in obstetrics the way it is used today.

As for chloroform, I quoted Davis of Milwaukee, who says it is the most dangerous anesthetic. It does not seem to be dangerous in obstetrics when used skillfully. In England they use it extensively without ill results. Potter uses it in a thousand cases a year without bad effects.

As for blue babies, I say there are no blue babies if you give morphine only in the initial injection. I want to emphasize the fact that you will have trouble if you use more than 1/6 grain or after the first injection.

As for Potter's Version, I think we were discussing the method of version and not Potter's idea about its application. Potter and about a half dozen other men in the United States are the only ones who use it or think it ought to be used in practically all cases. It is the method that we want, and its application should be left to the individual. It cannot be denied that Potter has given us the best obstetric manouver in the past forty years. I am against doing this operation in the home, because one cannot carry out the asepsis that is necessary. One does not do Laparotomies in the home so why do version? It is just as important. Both may be done in emergency.

The important point in all these procedures is to individualize the cases and be prepared to use the form of anesthesia indicated as well as the method of shortening labor. I never decide until I go to the labor case what form of anesthesia I will use or what process of shortening labor, if any.

Dr. C. B. McNairy, Kinston: I would like some reference to my question as to the effects upon the mentality of the child and the after effects upon the mother. What is going to be the effect?

Dr. Oren Moore, Chairman: No neurologist or other expert on that line has ever been able to tell what percentage of babies will be born affected. I will ask Dr. Procter.

Dr. Procter: The Chairman has already answered the question for me. I think that it is a question that will have to be answered in the future. I shall have to leave it to the psychiatrists.

ACUTE APPENDICITIS, ACUTE SALPINGITIS, ACUTE PYELITIS, DIFFERENTIAL DIAGNOSIS

Frank Worthington, M. D., Charlotte

The writer expects to introduce nothing new on this subject as it has been fully dealt with innumerable times, but since it is a problem that the general practitioner as well as the surgeon frequently confronts and since the treatment of the first is radical and the others conservative, perhaps it would not be amiss to refresh our minds on the subject from time to time.

It is a well recognized principle now that as soon as a troublesome appendix is diagnosed its removal is strongly indicated. For the woman an early diagnosis is not only important at all times but on some occasions almost vital.

On the other hand acute salpingitis is best treated conservatively and where the condition is found on exploration when an acute appendix has been expected the value of drainage is doubtful and a secondary operation is almost assured.

Acute pyelitis assuredly is not benefited by operation and to a patient already suffering from infection the sequelæ and discomforts of an operation are added. These few facts alone are sufficient to make the differential diagnosis of importance and we will attempt to give some of the points significant in this differentiation.

(1) Race.—Appendicitis must be much more strongly considered in the white than in the colored. The burden of proof is on the man who says a colored woman has appendicitis in view of our knowledge of the frequency of gonorrhœal infection in that race.
Pyelitis may occur in both with equal frequency.

2 Age.—This point is of not so much benefit. Both acute salpingitis and acute pyelitis are more common in the child-bearing age than at any other time. On the other hand acute appendicitis also is common at this time but is a little more frequent in the early years of this period. In those under the age of puberty both appendicitis and pyelitis are apt to occur but the appendix is the more

frequent offending organ. In those beyond the menopause appendicitis and acute salpingitis are rare. Pyelitis must be strongly considered.

(3) Marital State.—We must give the benefit of the doubt to the unmarried woman where acute salpingitis is suspected, although it must not be lost sight of. Certainly acute appendicitis is the most frequent of the three conditions. When the patient is married the condition of the husband's health must be considered and pregnancy must be confirmed or ruled out. With pregnancy acute pyelitis is common and acute salpingitis not rare. Attempts at producing abortion frequently lead to salpingitis and the history is hard to obtain. Careful examination of the pelvis usually confirms suspicion in these cases. A bloody discharge with soft patulous cervix and fundus slightly enlarged are usually found. The adnexæ may or may not be considered pathological as will be shown later. Appendicitis occurs during pregnancy but not so frequently as at other times. However, during this time it often runs a much more rapid course and for this reason an early diagnosis is most important. During the early months of pregnancy the operation can usually be done without disturbing the uterus and if the operator uses proper care and skill abortion is rare. At this time the disease also is not fulminating. On the other hand during the latter months of pregnancy the large fundus makes appendectomy more difficult. The course is fulminating, peritonitis develops rapidly and the condition can be handled unsatisfactorily by drainage. Following this the onset of labor is almost certain and the cervix usually dilates without any pain to the patient, the first hint of the condition being a rupture of the membranes or a bulging perineum. The child is usually dead and the death of the mother is almost certain. Early diagnosis and immediate operation are therefore most important in appendicular trouble with pregnancy.

(4) History.—Too much care cannot be taken in obtaining a history in any acute abdominal trouble and when the differential diagnosis must be made between the three conditions taken up in this paper the history is often the leading clue. Too often this is neglected.

Reviewing first appendicitis.—There have probably been previous attacks and vague digestive disturbances. An appendix seldom becomes very acute the first time it is noticed. The onset is insiduous and vague at first. Pain is an ever present symptom and is usually at first diffuse in character, later becoming localized over the appendix region. There is usually at first pain in the epigastrium and such an authority as Dr. J. M. T. Finney states that he always doubts the diagnosis of acute appendicitis if there is no history of general abdominal pain and particularly epigrastic pain in the beginning of the attack.

As the pain progresses pain becomes more localized and frequently the patient can put one finger on the painful sore spot and

definitely point to McBurney's point. Nausea is almost constant and the same may be said of vomiting, the latter is seldom persistent. Constipation is a more frequent complaint than diarrhœa.

In acute salpingitis there may or may not be previous history of menstrual disturbances and pain in the pelvis. The possibility of recent infection is to be considered. The onset is more abrupt than in appendicitis and may be ushered in with a chill. The pain complained of is usually colicky in character and at all times confined to the lower abdomen. As the condition progresses the patient complains definitely of pain in the pelvic region, usually bilateral. When told to point to the most painful spot she puts her hand all over the lower abdomen and if she does localize on the right side the point is usually below McBurney's point.

Nausea and vomiting may be present but this is not usual. It is rather the unusual.

In pyelitis previous history is very important. Again the presence of a pregnancy is important because of the frequency of pyelitis as a complication.

Usually a history of urinary disturbances such as dysuria and polyuria can be obtained but this is not constant.

The onset of acute illness is abrupt and often associated with a chill. Nausea is frequent and vomiting not uncommon. Pain is often entirely absent but at times may be as severe as that of a typical renal colic. The pain is more apt to be dull in character and confined to the lumbar region. Its presence on the left side is a great help in making a differential diagnosis but pyelitis is more frequent on the right.

(5) The physical findings are most important and no detail should be overlooked. Because of the frequency of other conditions outside the abdomen producing symptoms in that region the general survey of the throat, lungs, etc., should be routine. Coming to the more important examination we will take up first the question of temperature, pulse and respiration, urine and leucocytes.

(a) In acute appendicitis the temperature is elevated but not markedly. Seldom is a temperature over 101 seen with an appendix unless peritonitis has developed. This is not true of pyelitis where the temperature may reach the highest limits nor is it true of salpingitis where it usually will at some time during the day go quite high.

(b) Elevation of pulse with appendicitis is common and may be more significant than temperature. The pulse in pyelitis is relatively slow compared to the temperature. In acute salpingitis it is elevated with the temperature.

(c) Respirations are more limited with appendicitis than with other conditions and may be elevated for this reason. An extensive pelvic peritonitis may also limit the respiratory excursion of the abdomen. Pyelitis has no influence in this respect.

(d) The urine examined should always be a catheterized specimen and even then is not diagnostic when most important. It is a frequent occurrence to have no pus cells or R. B. C. in the urine during an early pyelitis and almost as frequent to find a few in appendicitis and salpingitis. A large quantity of these organic sediments should arouse suspicion at least. Ureteral catheterization is a great aid but has its disadvantages.—First, it is time consuming and if the findings are negative the patient has been put through an unnecessary examination. Second, in my opinion unwise to do it during an acute flare-up of a pyelitis unless its duration is for a number of days without signs of subsiding.

(e) The leucocyte count is an aid. In acute appendicitis we do not expect a count of over 20,000 unless pus is present. In acute pyelitis it may vary from a moderate increase to a tremendous leucocytosis, depending on the extent of ureteral obstruction and the subsequent tension of pus in the kidney pelvis. In salpingitis the count varies from slightly above normal to very high. A relative polymorphonuclear is present at all times.

(f) The general appearance of the patient is helpful. The patient with acute appendicitis is the most quiet of the three and protects herself, particularly the abdomen, in every way possible. The pyelitis case may be restless and is usually flushed. She may feel quite well. The salpingitis case does not look as sick as temperature, etc., would indicate.

(g) On abdominal examination the first things noticed are the extent of respiratory movement and the amount of distension. The former has been taken up. As to the latter, general distension is most common in the woman with salpingitis. It is not rare with pyelitis.

On palpation the tenderness which may or may not be found with pyelitis is over the kidney affected and in the lumbar region. To me the tenderness obtained on deep palpation of a kidney is not very significant. There is slight if any muscle spasm. In appendicitis the tenderness and muscle spasms are pretty well localized over McBurney's point and the former can frequently be indicated with one finger. If there is a peritonitis of course tenderness and muscle spasm are diffuse but even in these cases sudden pressure or release of pressure on the opposite side of the abdomen will cause referred pain over the appendix. In salpingitis the tenderness is usually just above the pubis, bilateral but more pronouced on one side. The upper abdomen is markedly free from tenderness and muscle spasm anywhere is not extreme.

Pelvic examination may be misleading. A bulging cul-de-sac or easily palpable enlarged tubes are almost diagnostic but they are often absent and the only thing to substantiate our diagnosis of acute salpingitis is perhaps an adherent retroflexed uterus and adherent ovaries with possibly a little thickening of the adnexæ.

In conclusion if I have at all given the true findings it is evident that the paths for error are numerous and the differential points fine. It is only by paying strict attention to all of them that we avoid mistakes and even then we will make them. After all the points in evidence, for each is in our mind, we must frequently in the final analysis resort to our own "feeling" in the matter. It is that faculty which distinguishes the extraordinary surgeon from the average and is in part inborn and in part cultivated, the ablest teacher being our mistakes.

DISCUSSION

Dr. R. T. Ferguson, Charlotte: Gentlemen: Symptoms are very misleading. After doing general surgery for more than fifteen years and now limiting my work to gynecology, I feel that I am going into the work with an open mind.

The symptoms that come from pelvic disease are widely distributed over the body, as with many other diseases. A man doing gynecology is especially apt to attribute every symptom to pelvic troubles. He is looking especially for them and has his mind on them. A specialist in stomach diseases attributes every disease to the stomach, to the intestines or to constipation, or something else in his special part of the body. The general surgeon necessarily has to look to every part of the body to discover what particular thing is causing the present symptoms.

I have found in my work in the pelvis that a large part of the disturbances in the pelvis are due to the misuse of forceps or to gonorrheal infections. When you cut out these two you have very little left in the pelvis for the gynecologist to work on. I believe there is more harm done by obstetricians in the use of forceps than in any other branch of practice. We all know that cases that come from pelvic infection or gonorrhea cause a great number of pelvic diseases. The cases run anywhere from sixty to ninety-five per cent in my own work. In the gynecological dispensary in Richmond many years ago we found that a large number of these cases, I don't remember the percentage, were caused by gonorrheal infection. You can't take symptoms as they come as being distinctive of any particular trouble, especially in the pelvis.

The slightest pathological disturbances in the pelvis are going to cause symptoms, but how are we going to distinguish? The best way is to take time in the examination of the pelvis. I have found by experience that if you will make an examination, stop a while, discuss the symptoms, and then go back again, that you can very often make out conditions that you cannot make out at the first examination, so the important thing is to be thorough in your examination, taking one, two or three hours for an examination if necessary. If you cannot make a diagnosis, refer the patient to some one whom you believe can, and do not treat a patient empirically.

Dr. Owen Smith, High Point: Dr. Ferguson stole my thunder, and so I would just like to say "Amen" to all that he said. I have had the same general experience that he has. The great trouble with the general practitioner is that he doesn't take the time to thoroughly examine patients. Also they need to study their patients more. There is a great deal of sympathetic action with all female troubles, necessitating a search for cause and effect. You often think they exaggerate when there is a great deal more wrong than a superficial examination shows. The great thing I want to say is that none of us take time to make a thorough, competent diagnosis. Those cases need study, and I will often examine a woman today and not make up my mind what is the matter, and the same thing tomorrow. You cannot do it in a hurry, I don't care how expert you are, you can't do it without taking a great deal of time in a great many cases. A great many cases will come into your office and say doctors have done this or that without result, and then I have to take a great deal of time to locate the condition, as it is evident the others haven't given the case time and study enough to locate the trouble.

Dr. Ferguson, you said one thing that I would like to add one thing to, and that is that infections and forceps cause most of the trouble. Didn't you forget pituitrin? There are too many of them that come in all torn to pieces, messed up, and when asked, "How long have you been this way?" will answer, "Since my last baby." That drug is dangerous. Pituitrin sends a lot of women to the gynecologist. If it is used right in small doses it *may* be all right and do no harm, but from what I have seen it is *all wrong*.

The great thing, in my idea, is for the general practitioner to study his cases, examine them thoroughly. Every man among us is capable of examining a lot better than he does. The cases don't all need to go to the hospital right away. The trouble is we don't take the time to locate and treat the trouble. Pus tubes are not found and pyelitis is overlooked in a whole lot of cases. These conditions are difficult to differentiate. It is a thing that does take time and every one of them are important to be diagnosed and ought to be treated right, and if you are going to make a superficial examination, where is your patient going to land? Let's take more time.

Dr. Worthington, closing the discussion: The discussion got off somewhat on a sidetrack, and took up chronic, rather than acute abdominal conditions. I tried to bring out in my paper that the differential diagnosis is very important in these acute conditions as well as in the chronic. When you get down to the last analysis the important part is the diagnosis of the appendix.

PELVIC PSYCHOSES

DeWitt Kluttz, M. D., Washington

This paper has been written about what is probably the least interesting class of patients with whom we have to deal—those patients whom we can least satisfy, and those whom we can do the least for. They all try patent medicines, give the osteopath a chance, and the chiropractor promises and fails with most of them. Any practitioner going into a new territory will often hear these words, "I have been to all the doctors, and now I am going to try you"—so often have I heard this, that I hope to learn something from a discussion of what we please to call the Hysterical or Neurasthentic woman. Must we have them with us always? Or can there be some means of preventing or curing them. Life is seldom at stake, but life is made unpleasant for many besides the sufferers. We pity them, and sympathize with the husband and family, but probably too often stop with this after the diagnosis of hysteria, premature menopause, etc., and wish them off on someone else.

The symptoms are too fresh in our mind to need discussion. As enumerated by one author—"restlessness, difficulty in self control; dissatisfaction with everything, difficulty in finding contentment in one's own efforts; want of interest in all absorbing subjects and objects; indifference, indolence and pessimism; sometimes outbreaks of anger with a tendency to attack; sleeplessness, functional digestive disorders, palpitation, flushes, headache, indefinite pains, and paresthesias, and almost any other symptoms that might be mentioned."

Surely there must be causes for many of these symptoms. Neurasthenia may exist independently of local disease, or may exist coincidentally with it. Causes may not be complained of until the general health has been impaired. It may be worth while to inquire briefly into the physiological and pathological theories as advanced by students of this condition. The nervous system with reflex action on all bodily processes seems to play the principal part; the influence of internal secretions seems to be more than a theoretical fad. The pelvic organs contain a mesh work of nerves and are intimately connected with the C. N. S., both by spinal nerves and by the sympathetic system. Quoting a German author, "No spinal reflex has such widely opened and easily accessible paths of conductivity towards the organ of mind as has the sexual reflex." Again—"The menstrual process is the only process in relation to which the organ of mind somewhat readily loses the remarkable stability of its equilibrium." Through their close connection with the autonomic nervous system and through their harmones, the glands of internal secretion exercise a particular influence on each other and on the organs supplied by these nerves—the vegetative organs. Influence from these processes in man's life is rather rare. Woman's

life is made up of frequent critical periods, and often these are attended by changes in one of these glands, the result of disease, injury, surgery, or peculiarities in the particular subject. These changes may upset their normal correlated balance and cause abnormal action in more distant glands of the group, affecting the metabolic and vital processes of the entire organism. Prepuberal and puberal, menstrual, conception and pregnancy, partuition, lactation and menopause—the outcome of any of these periods may be such as to change the entire character of the individual.

At the beginning as at the end of sexual life marked changes take place in the pelvic organs. These new conditions, almost within the C. N. S. itself, often upset this system, and all body processes may be reflexly affected. It is said that during the few months preceding puberty the heart and blood vessels undergo their most rapid growth, in attaining normal adult character, being in an unstable state and susceptible to extraneous stimuli. Occasionally this results in an overgrowth of the heart, and in these patients we see pronounced reflex cardio-vascular symptoms, usually just prior to the monthly periods. The benign hypertension occasionally seen developing with the menopause, and the high blood pressure of pregnancy seem to have some relation to this, at least suspended ovarism function, with its attendant effect on the nerves have a hand in it. Some effects on general body development and on the nervous system from dysfunction in the endocrine system is shown in the following instances:

Patient B. B.—Weight 275 lbs., 6 feet 4 inches in height with normal proportions, large head, prominent jaw, small hands, with tendency to male characteristics. Physique suggestive of gigantism from hyperactivity of anterior lobe of pituitary—X-ray of pituitary fossa normal. Infantile uterus, menses established late, dysmenorrhœa with varying ammenorrhea. These symptoms from hypofunction of ovaries, the pituitary overaction be compensatory. D. & C. failed to give any relief; thyroid extract caused an increase of symptoms; corpus lutein after two months gave marked relief.

Patient M. B.—Physical examination and symptoms almost identical with preceding case except in the following respects: Height 5 feet 6 inches, short limbs; disproportionate distribution of adipose tissue; pituitary fossa slightly smaller than normal; slight enlargement of thyroid. Dysmenorrhea and ammenorrhea. This case is one of hyposecretion of the ant. pituitary body or of the ovaries, or possibly both. Thyroid compensatorily hyperactive. No relief from two months' use of corpus lutein and thyroid extract. After three weeks combined treatment of anterior pituitary substance and corpus lutein some improvement has been noted.

Both of these patients showed marked reflex symptoms of all varieties, especially cardio-vascular and gastro-intestinal. In each there was moderate enlargement of the heart, pulse varying from 90 to 125; blood pressure subnormal.

Another case showing pituitary hypofunction with increased activity of the ovaries is noted in a short limbed markedly adipose girl of 19. She has distinctly feminine features, with secondary sexual characteristics fully developed. She has suffered from an aggravating metrorrhagia since menses were first established at 14 years of age. Pituitary fossa normal in size. She has nervous spells at six or eight months intervals, usually consisting of aphonia, paræsthesia, unconsciousness, and since becoming a nurse she has taken up appendicitis. Anterior pituitary extract, grains 2 t. i. d. by month is causing the menstrual flow to become about normal.

The effects of secondary anæmia on menstrual life is often seen in our malarial infested section. Patient M. J. age 15, severe malarial chills with accompanying anemia for past five months. Monthly dysmen. and ammen. accompanied by drawing and fainting spells began three months ago. Iron and arsenic given; color improved; menstruation established but dysmen. and nervous spells continued. Corpus lutein administered; after two months there was an entire relief of symptoms. A year preceding a sister went through the same condition and treatment with the same results. The majority of cases of delayed maturity of the ovaries are not results of secondary anæmia, and the extract alone will aid many.

Out of the many causes suggested for Toxæmia of Pregnancy, that of pelvic reflex and ovarian non-function is certainly proven in many cases. Bearing on the theory that this may be aided by a reflex from irritation in the gastro-intestinal tract, or by absorption from disease situated there is the following case: Convulsions, marked emesis and abdominal distension continuing for eight days after Cæsarean section was performed. On that day six round worms were vomited and convulsions ceased. The secondary anæmia, with the resulting deposits of hematin in the liver causing fatty degeneration—a recent theory—may have been a factor in this case. We frequently see eclampsia in those who have had severe malaria.

Now let us leave this group and consider what we might call the accidental neurotic. Most of these we find have borne children. After one of these labors they undergo a marked change. Bad each month, but more or less neurotic at all times. It is in these that we can often find a cause and one that can be remedied. Mid-wifery is responsible for some of it, ignorance and carelessness about exertion following delivery for most of it, unavoidable difficulties of labor and pituitrin for its share.

Limited records of three cases of very nervous patients should be enough to be convincing that simply staying in bed long enough after confinement will save much of this trouble and be a cure for some of it. In each of these, after passing a stormy third month the uterus managed to squirm into the more spacious abdominal cavity instead of discharging its fœtus from its cramped position in the sacral curve. They were all required to remain in bed three weeks after delivery. In one, a Smith pessary was used for two months.

None have shown any further nervous symptoms. A closely related condition, and one which deserves much blame for nervous spells, is prolapse uteri. It is amazing how little importance many women put upon this condition. A Menge pessary, or in simple retroversion, a Smith pessary, if you can destroy it after a few months' use, will often give relief, or at least it will show what good a permanent surgical support will accomplish.

So often we see fainting, drawing spells, palpitation and flushes entirely cured by a plastic operation. Replacement of the gaping ends of sphincter and muscles, suturing a torn cervix, removal of a displaced coccygeal bone, or repairing other injuries of childbirth. Cures come from removal of cervical polyps, and occasionally from resection of diseased ovaries, but this is often the cause of more trouble. Following incomplete surgery of the ovaries, hysterectomy, or even simple curettage, artificial menopause will sometimes develop. Failure to get results in some of these cases may be because of other conditions being present. In one case after suspension of a retroverted womb the reflex symptoms continued. X-ray examination showed the ascending and transverse colon mostly in the pelvis. An abdominal belt with a pad above the symphysis served to restore the viscera and keep the patient well.

Unhappy home life, mismated couples, faithless husbands, venereal disease in either, impotence or excess is a source of much trouble. Vaginismus, whether the outcome of one of the social conditions, or caused by anatomical defects, makes many nervous wrecks.

Many women are essentially neuræsthenic. Methods of psychiatry may aid these, but usually the least they see of a doctor the better. Psychoses resulting from pelvic and sexual troubles are numerous. More patience from the patient, and a thorough examination will often show a cause that may be remedied.

DISCUSSION

Dr. C. B. McNairy, Kinston: I am wholly unprepared, but I am interested, of course. I used to be closely associated with the writer's father a good many years ago. I remember quite pleasantly when I first started the practice of medicine that his father was one of my dearest friends.

As to the cause of what part physical defects play in physcotic or neurotic patients, I don't know. There is one thing I do know, the more I study these things the less I know about them. I cannot but think that among the patients that the doctor describes, probably a close study of the family history and the early childhood of said patients might reveal quite a good deal. I doubt seriously that misplacements and lacerations are more than the pressing of the electric button that fires the bomb that has long since been concealed.

Dr. Kluttz, closing the discussion: I think one authority covers what the doctor has just said, that among a great many of these patients you will find some hereditary nervous tendency. The fact that you do see them relieved of their symptoms by gynecological repairs and in some cases by medical treatment serves to put less importance on the roll of heredity.

TUBERCULOSIS OF THE UTERUS

(With Report of a Case)

Brodie C. Nalle, M. A., M. D., Charlotte

I hope the scarcity of reports of cases on Tuberculosis of the Uterus, and the desire to add the report of a case to the very small number of reported cases, justifies me in presenting this paper.

The Index Catalogue of the Surgeon General's Library and the Index Medicus through 1919 show reports of only 146 cases of Tuberculosis of the Uterus, excluding those cases invading only the cervix uteri. The Bibliography for the past ten years includes a comparatively small number of contributions. The greater part of these contributions have come from foreign authors. Only a very small number have come from the United States.

It is the consenus of opinion that Tuberculosis of the Uterus is by no means a curiosity, but the scarcity of reports of cases of the disease is at least surprising and suggestive of the fact that a large number of these cases pass unreported and possibly unrecognized.

Tuberculosis of the Uterus occurs in four varieties—Ulcerative, Miliary, Interstitial and Peritoneal.

"In the miliary type of the disease the mucosa is studded with minute slightly raised yellowish-white tubercles. It is practically agreed that as soon as ulcers develop in the mucosa the disease has passed from the miliary to the ulcerative type." (Scott.)

The interstitial variety is less frequent in its occurrence than either of the other varieties.

The peritoneal variety is secondary to a tubercular peritonitis.

The symptoms are those of other inflammatory uterine conditions: dysmenorrhea, metrorrhagia and menorrhea. The sensation of weight and pain in the pelvis, progressive constipation, painful defecation and pain radiating from the hypogastrium to the lumbar region, to the thorax and along the perineum are suggestive of tuberculosis of the uterus.

The differential diagnosis lies between carcinoma, chronic endometritis, syphilis and tuberculosis.

The diagnosis of tuberculosis can be made, according to Cummings, in an article published in 1912, by the detection of bacilli in smears obtained from the cervix, and by microscopic examination of the tissues removed by the curette.

The prognosis depends upon the stage at which the disease is detected and whether its presence in the uterus is primary or secondary.

The treatment is (1) surgical, (2) X-ray, or the combination of both. The constitutional treatment must always be borne in mind, and especially when the uterine tuberculosis is secondary to some other active focus. Surgical treatment alone is permissable when the disease is primary and confined to the endometrium. Scott, in an article in the California Medical Journal, in 1919, says that simple curettement will cure primary tubercular endometritis where the disease has not reached the tubes. Complete hysterectomy is indicated when the disease has reached as far as the appendages.

Deep X-ray treatment alone is advisable in those cases in which, for any reason operative treatment is contraindicated.

While a good many authorities consider surgery alone sufficient, it seems more logical and much safer to follow all operated cases with deep X-ray treatments.

E. Vogt, of Berlin, 1921, says he "has examined the curative effect of post-operative rœntgenotherapy in 33 cases of tuberculosis of the female genitalia. In 25 cases of genital and peritoneal tuberculosis the ascites were drained through a simple exploratory laparotomy opening; in four of the cases a conservative adnexopexy and in four cases a radical operation was performed prior to the rœntgenotherapy. As soon as the patients were able to leave their beds the rœntgenotherapy was begun, and lasted for several months; there was an interval of from four to six weeks between the sixth and the tenth irradiation. Of the 33 patients nine died before the termination of the treatment. The curative effect of the treatment could thus be observed in the case of the 24 patients who were examined after the termination of the treatment. Of them 21 are now able to work, two are only partly cured and one is an invalid. The records of various gynecologists show that the average percentage of the patients suffering from genital and peritoneal tuberculosis who have been permanently cured by operation is about 33%. In 16 similar cases, in which post-operative rœntgenotherapy was applied, 13 of the patients—or 80%—were permanently cured. A fistula was never observed in these cases; although Kronig observed fistula in 8% of the cases which he treated surgically. The rœntgen treatment also affected the menstruation of the patients very favorably; in only 42% did a permanent rœntgen amenorrhea occur, and 58% of the patients began to menstruate regularly a short time after the treatment.

"These favorable results show that the rœntgenotherapy favorably affected the condition of all the patients who had been previously treated surgically. The author, therefore, recommends that post-operative rœntgenotherapy be applied in all the following cases: (1) after every operative treatment of genital and peritoneal tuberculosis, in which a part of the affected tissues cannot be extirpated; (2) after exploratory laparotomy with drainage of the

ascites, and after radical operations during which a tuberculous process has been observed in the peritoneum; (3) in cases in which an adnexopexy has been performed, but in which the thoroughness of the operation has been hindered by severe adhesions; (4) and also in cases in which menorrhagia or metrorrhagia occurs after the adnéxopexy.

"Roentgen therapy in genital tuberculosis is advisable under the following conditions; (1) in cases of endometritis tuberculosa, resulting in dismenorrhea or menorrhagias without evidence of extreme involvement of the adnexa or peritoneum. (2) If, for any reason, operative treatment is contra-indicated. It is just in cases of this sort that the value of radiotherapy become strikingly apparent. Among such contra-indications the author cites ascites with fever, active lung processes or active tubercular foci in other organs."

REPORT OF CASE

Mrs. B., age 41; white; milliner.

Family history: negative for tuberculosis.

Menstruation began at 15 years; painful but otherwise normal. Married at 18 years; became pregnant one month later, but miscarried at three months. Her second pregnancy went to maturity and this child is now 21 years old and healthy. She afterwards had two other miscarriages, each about four months. Each of her miscarriages were, according to the patient, precipitated by a severe dysentery. Operated for cystocele and perineorrhaphy ten years ago. Married second time eight years ago. No pregnancies since. Menstruation has been irregular and occasionally profuse for past three years.

On May 5th, 1921, I saw this patient, whose complaint was a metrorrhagia of five weeks' duration. Physical examination was negative, except for her metrorrhagia and a secondary anemia. She was curetted on May 7th, 1921; returned to work at end of one week. Microscopic examination of the tissue gotten by the curette was made by two different pathologists at different laboratories and diagnosed by each as tubercular endometritis of the miliary type. The patient was advised of the diagnosis, but refused further treatment. She enjoyed splendid health for the following ten months and could not be persuaded that her trouble was at all serious, especially since not even her menstruation appeared again after the curettement. However, a few weeks ago she began again with an excessive loss of blood, and this has continued with some intermissions until this time.

She has consented now to submit to further treatment, which will consist of either curettement or pan-hysterectomy, followed by deep X-ray therapy. Very recent physical examination of the patient shows no sign of tuberculosis elsewhere, so I feel justified in reporting this as a probable case of primary tuberculosis of the endometrium.

CONCLUSIONS

(1) Tuberculosis of the Uterus occurs at all ages, but is most common between the ages of 20 to 30 years.

(2) It occurs more often than is suspected from the number of cases reported.

(3) Symptoms are similar to other inflammatory conditions of the uterus.

(4) The primary form of the disease is comparatively rare—most cases being secondary.

(5) It occurs in four main types—miliary, ulcerative, interstitial and peritoneal.

(6) Prognosis in early detected cases with the present ideas of treatment is not so bad as has been generally supposed.

(7) X-ray treatment for those cases in which surgery is contraindicated, with post-operative X-ray treatment for those cases in which surgery is not contraindicated.

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DISCUSSION

Dr. R. T. Ferguson, Charlotte: Gentlemen: I will take but a few moments of your time. This is a very interesting paper in that it occurs very seldom. I wish in this connection to report a case. This patient was operated on in December, 1910, for acute appendicitis. I opened her abdomen and found that the intestines were covered with miliary tubercles. The appendix was removed and drainage inserted for 48 hours and she made an uneventful recovery. For eleven years she remained apparently quite well. On my return from the army, in December, 1919, the patient presented herself again with symptoms in her left pelvis. On operating I found a pus tube, which was also tubercular. This was removed and no sign of any tubercles remained on the intestines. The patient remained well for six months, when she returned and upon examination and opening her abdomen I found a tubercular tumor of the sigmoid flexure of the colon and I resected 6 inches of the sigmoid and did an anastomosis with good recovery. No tubercular endometritis had developed up to this time. One year later, however, she developed a swelling in the left knee joint which is undoubtedly tubercular.

PUBLIC HEALTH AND EDUCATION

N. B. Adams, M. D., Murphy, Chairman

MEDICAL ORGANIZATION: ITS PURPOSES

N. B. Adams, M. D., Murphy

I think it is becoming that my first word on this occasion should be one of appreciation and gratitude. To be appointed Chairman of the Section of Public Health and Education is an honor to which I had hardly hoped to aspire; and especially is this true of our own organization, which with this meeting rounds out a long and honorable existence. To have been deemed worthy to occupy this position, which has been filled by men, many of whom in the early days contributed in no small manner to the making of medical history, and whose names are still revered as masters of their calling, is in itself no slight distinction. But the chief source of gratification in such preferment lies in the personal tribute it conveys. Aside from the approval of his own conscience, there is no keener satisfaction in life to the man whose heart is right than to feel that he has the confidence and esteem of those who know him best.

Formal words are always inadequate to express the deepest feeling. Let the sincerity of this simple acknowledgment atone for all it lacks in grace and fervor, and believe me when I say that the North Carolina State Medical Association will never have a chairman more deeply sensible of the honor of the office, nor more genuinely appreciative of the honor it implies.

Not the least difficult thing about this address is the choosing of a theme. Medical Organization is not a subject which appeals to the taste and inclinations of many doctors. But the remarkable impetus which the movement has received in recent years and the rapid multiplication of its activities and interests which have followed in its train, are such as at this time peculiarly challenge attention and merit our earnest consideration. What does it mean? Are the purposes of Medical Organization worthy ones, and if so are we giving to it individually, and as a profession, the active support and intelligent consideration it deserves?

The purposes of Medical Organization should be to federate and bring in to one compact body the entire medical profession of the State of North Carolina, with a view to the extension of medical knowledge and the advancement of medical science, to the elevation of the standard of medical education and to the enactment and enforcement of just medical laws, to the promotion of friendly intercourse and to the guarding and fostering of their material interests, and to the enlightenment and direction of public opinion in regard to the great problems of public health and education, so that the profession may become more capable and honorable within itself and more useful to the public in the prevention and cure of disease and in prolonging and adding comfort to life.

Certainly no more inspiring declaration of principles could be formulated, nor can any fair minded man refuse to concede their nobility of conception and beneficence of intention. Yet they appeal to physicians of the State at large with pitifully barren results. Of the more than 2,139 physicians in North Carolina, only about 1,493 are members of this Society. Of the one hundred counties in the State only 96 have a semblance of a Society and many of them have only a semblance. Why is this? There must be some explanation for such an anomalous condition in a State which along other lines takes high rank for progressiveness and enlightenment. While primarily, of course, the cause for this deplorable state of affairs is to be sought in the apathy of the individual members of the profession, viewing the question in a broader light, it seems evident to me that a larger portion of the blame is due to the apathy of the societies themselves. It is not my purpose to say unpleasant things in this connection nor to point out at this time wherein the weakness lies, but it is apparent that under the present order of things the Society is neglecting one of the most momentous duties, namely, that of bringing into active fellowship the entire profession of the State; and until this duty is recognized as paramount and earnestly grappled with, the highest purposes of our organization must remain impossible of attainment.

Much more might be said in extenuation of the indifference of the individual physician—and yet by no means enough to excuse it. Unlike that of other professions, the work of the physician is not performed in the limelight where the plaudits of the public may be invoked to encourage and inspire. Instead, his labors are of a strictly personal character, and in the seclusion of the sick-room he must face the issues of life and death, often alone and without even the comfort of moral support. It is not strange that taciturnity, introspection, self-sufficiency, sensitiveness, intolerance, moodiness, and similar characteristics should come to be parts of his very nature. And then as responsibilities increase and the demands upon his time and strength become more exacting, leisure for study and social diversion diminishes, and one by one the ideals of his student days vanish and are forgotten. These are the men, my fellows, thoughtful, earnest, and conscientious, albeit somewhat given to suspicion, who need the medical society, not alone to help them to be better doctors, but also to save them from the ruts and pitfalls of the lonely roads they travel.

Now, what has the Medical Society to offer to counteract the tendency just mentioned, and why should it appeal especially to physicians who live and labor in fields remote from medical centers? First there is the *educational value*. The great majority of physicians who live in towns and rural districts are general practitioners—in the nature of the case must be—and they above all others need to realize that medical education is one of those never ending tasks to which the diploma is in reality only an introduction. So numerous and frequent are the additions to medical knowledge that what was taught on a given subject when in college may in a very few years become ancient history. Medical books, medical journals, and medical so-

cieties, with perhaps an occasional post graduate course, are the only means by which the practitioner may keep pace with his profession. The value of clinical experience is not under-estimated, if by careful study it be converted into clinical wisdom. But knowledge of a disease does not always consist in the number of cases seen. A man who has seen and treated 500 cases of pneumonia may know far less about the disease than the man who has seen and studied 50 cases. Osler says that "intellectual laziness is the killing vice of the doctor." Often, it is true, it is the result of physical weariness. But no physician has the right to assume that his knowledge is complete on any subject. Justice to his patients and the repose of his own conscience demand that he should *know* that he is doing the best thing that could be done in every case. Years of practice and experience are valuable assets only if they do not beget a feeling of satisfaction. It is probably true that no man, however brilliant and well posted attended a live medical society who did not derive some benefit from it—that is if his mental attitude was receptive and earnest instead of critical.

Then there is the *social value* of the medical society. It has always seemed to me that the bickerings and jealousies and bitter antagonisms for which our profession is so widely noted, are due in the main to lack of personal acquaintance. Man for man the members of the medical profession are not excelled in the qualities which go to make true nobility of character by those in any walk of life. Indeed for self-sacrificing devotion to duty, for generosity, unostentatious heroism, physicians have a reputation which is recognized of all men. Yet, sad and pitiful to confess, in many localities they dwell together in less accord than is shown by rival tradesmen. This can only be because they do not understand each other. Let me mention what I consider two of the most prolific causes of professional dissention. One is tale-bearing patients. So intimate and personal is the relation between doctor and patient, so real and deep does the mutual attachment become, that a strictly professional attitude cannot always be maintained, and, prompted by a friendly but mistaken interest, patients will often, perhaps innocently, repeat gossip which contain the germs of discord. Again quoting from one of Osler's splendid addresses, "It is the confounded tales of patients which so often set us by the ears; but if a man makes it a rule never under any circumstances to *believe* a story told by a patient to the detriment of a fellow practitioner—even if he knows it to be true—though the measure he metes may not be measured to him again, he will have the satisfaction of knowing that he has closed his ears to ninety-nine lies, and to have missed the hundredth truth will not hurt him."

The other most fertile source of ill feeling is to be found in the disposition on the part of some physicians to regard a certain territory or neighborhood as private property, and to look upon any other physician who invades as an interloper and intruder. Most often this disposition may be seen among older physicians. I may speak frankly without offence on this delicate subject, for I have reached that uncertain period in my professional life when the younger men

will not let me be classed with them, and for awhile, at least, I refuse to be classed with the down-and-outers. This attitude on the part of the older physician is all wrong. He holds no title-deed to any particular area for practice, and must know that competition must come sooner or later. Let him do so with a magnanimous spirit. Above all things let us realize, wherever our lots are cast, that life is too short and time too precious for the petty jealousies which manifest themselves in the shrugging of shoulders, the arching of the eyebrow, or the supercillious grin, as in the spoken word.

There are other beneficial uses of the medical society to the doctor—the business, etc., but let us notice some of the values of the medical society to the *public*. It would be superfluous in this presence to more than allude to the fact that the great central purposes of the medical profession are the relief of human suffering and the cure and prevention of disease. To the true physician these are the controlling motives of his every endeavor, and in the pursuit of them as a rule the unworthy soon drop out and the unfit are soon eliminated. Whatever agency, therefore, that tends to make the physician a better doctor and a better man in a very deep sense must be of value to the public which he serves. But the value of the medical society to the public is not to be found alone in such indirect benefits, real and important though they are. They may be made live and active agencies for the awakening of popular interest and the dissemination of needed instruction upon the subject of *public health* and *education*, and the great duties of citizenship in connection with these problems. It is often charged that the people are apathetic on these questions. True; but their apathy is usually due to ignorance. We cannot think that parents and public officials should be indifferent to the health and happiness of their families or communities. What matter if the education of the public should result in pecuniary loss to the profession? Among the virtues which unite to make our profession "the noblest Roman of them all," not the least is the voluntary sacrificing of its own interest for the interest of the people. No other calling since the history of man began has been distinguished by the altruistic effort to do away with the very purpose for which it existed. He is an unworthy member of the medical profession who does not in his deepest soul echo the sentiment that "we are here, not to get all we can out of life about us, but to see how much we can add to it."

Let me close before I merit at your hands the comment which a long-suffering little fellow made upon the new trustee of his school. Being newly elected to the office and imagining himself a great orator, the trustee took advantage of his first visit to address the school, which he did at tiresome length, and with many repetitions. Finally unable to endure more the little fellow sitting in the rear of the house stole out. When asked if the trustee had finished his talk, he replied: "Gee! yes, but the guy won't stop!"

As a final word let me wish for our organization with all its agencies, and for you, its members, the fullest measure of success. A recent writer whose name I regret to say I do not know defines success in these beautiful words: "He has achieved success who has

lived well, laughed often, and loved much; who has gained the respect of intelligent men, and the love of little children; who has filled his niche and accomplished his task; who has left the world better than he found it—whether by an improved poppy, a perfect poem, or a rescued soul; who has never lacked appreciation of earth's beauty or failed to express it; who has always looked for the best in others and given the best he had; whose life was an inspiration, whose memory is a benediction."

This *is* success. May we all attain it.

DISCUSSION

Dr. W. S. Rankin, Raleigh: Mr. Chairman: I don't know whether the Chairman's address is open for discussion or not, but I think we should express our appreciation for the sound principles of high idealism that you hold up to us.

You know, I always have a certain feeling of State pride when I see a man come from the corners of the State with a message like that. It always makes me feel that old North Carolina is all to the good.

I think that the subject that you used in making the address is at this time, sir, beyond the shadow of a doubt, a most important one for the consideration of the profession and those of us who are interested in public health. To those who have been interested in the public outlook and looking ahead it is just as clear as day that the big advance in public health is just around the corner. That advance is going to be through the recognition by the profession of their individual and their collective interest, their higher interest and their financial interest in public health, and their active participation in it, instead of leaving it to a few health officers.

You refer in your paper to the apathy of county medical societies. When you see a muscle that is never used, it atrophies, it wastes, becomes flaccid, soft and useless, and when you see a social agency, a county medical society that has not any real big purpose, or activity, or ambition, you have apathy. Now, the great trouble with our county medical societies has been heretofore that the individual members have attended the organization merely for discussion, getting together and talking, and you know that all over North Carolina you will find some of the very best of men saying, "I used to go to county societies, but they never do a thing but talk." Now, if we ever expect to build up medicine and wish a strong county society, we have got to build them up by giving them something worth while doing to do. And when the members of the profession see their large common interests, they are going to forget their little petty jealousies, they are going to forget these little things that divide them and they are going to be cemented together in one great, strong body by the larger common interests. The profession has got to get out of its shell, out of its chrysalis, and lead a broader open life. To do so will make the past look very small as compared with their future, and that future is not far off.

I move, ladies and gentlemen, that we give the Chairman a vote of appreciation for the splendid address that he just presented (Motion carried.)

THE RELATION OF GENERAL PRACTITIONERS TO VENEREAL DISEASES

James A. Keiger, M. D., Greensboro

For the past five years we have heard and read much about the venereal diseases. We have been told that gonorrhea, and syphilis are more prevalent than any other infectious disease, except measles; that probably 50% of the abdominal operations on women result from gonococcal infection usually contracted innocently; that a large percentage of the blindness in children is traceable to infected mothers: that still-births and early deaths to syphilis. These facts, coupled with the loss in physical power on the part of those who are infected, place the venereal diseases in the front rank of medical problems.

Considering the wide-spread prevalence of these infections, I believe that every medical man, specialist, as well as general practitioner, is vitally interested. For there is no field of medicine that does not at some time or other encounter a syphilitic or gonococcal infected patient. If then the various specialists meet with these cases, does not the general practitioner meet with them more so, since he is a combination of them all?

The analogy is not perfect, but I believe we might look upon the general medical man as the clearing station for all the casualties. For, to him the wife comes when she has some "female" or bladder trouble; to him the mother brings her children when they are not doing well; and, to him the boy or young man reluctantly reports when he realizes that he has been indiscreet. Thus we see that the physician has the first opportunity to detect a gonorrheal or syphilitic infection in the wife, father, mother, or children.

Having made the diagnosis, and there is no reason why he cannot, for the laboratory of the State Health Department is always ready to aid, he must decide which cases he can and will properly treat, and which he will refer. I use the term "properly" advisedly. For persons infected with gonorrhea or syphilis are seriously ill and deserve to be treated with the same care and skill that is given to the typhoid, pneumonia or diphtheria patient.

To discuss in detail any of the various plans of treatment would take entirely too much time, so I shall make only a few general remarks, relative thereto: first, the general practitioner must, at least, treat the acute cases, for there are not specialist enough in the State to handle them if they are all referred. But let me add that, unless he is willing to examine his patients, he should let them go to the druggist and quack as they have been doing in the past; second, refer the chronic cases to the specialist and do not tell them

that they are incurable; third, do not be in a hurry to treat ulcerations on the genitalia with causties, but rather consider all such cases as syphilitic until proved otherwise, by the microscope or other laboratory tests; fourth, do not tell a syphilitic that three or six "shots" is sufficient, for, in the light of our present knowledge, we do not think it is, in fact, know that it is not, in the vast majority of cases.

What, then, is the relation of the general practitioners to venereal diseases? I think it can be answered by saying that it is the same as that towards tuberculosis, cancer, malaria, etc. And the solution rests on co-operation of all the medical men giving their best efforts to diagnose early and then treat with skill and care.

DISCUSSION

Dr. W. S. Rankin, Raleigh: I have enjoyed the paper very much. Dr. Keiger made the small amount of time that he used count.

I want to ask Dr. Keiger to tell us something in closing the discussion, something about the number of doses necessary, not to cure the patient, but to remove or eliminate in a practical way the infectiousness of the patient. The patient's interest requires cure, but we health officers have to consider the public. The public's interests do not necessarily require cure. If we can remove the infectiousness of the individual the public's interests will be satisfied. I would like to know how many doses it takes to render the average patient practically non-infectious.

Dr. J. S. Mitchener, Raleigh: We ought to get the people who have syphilis and gonorrhea to realize that they are in as serious a condition as those who have pneumonia and typhoid fever or other such diseases. Regarding the role of the druggist in treatment, the medical profession is responsible for the prescribing pharmacist. Many physicians encourage such a state of affairs by prescribing and making no examination. Also many men with gonorrhea go to the physician who takes some pills out of a bottle and gives them to the patient. This is a bad lesson the doctor has taught. The patient will say, "The doctor didn't do anything but give me some pills to take, and he charged me $2.00. The druggist gives me the same thing for less money, and therefore, I can save money by going to the druggist."

Now, I think each county medical society should enter into an agreement with the druggists. The medical man should agree to prescribe for venereal diseases if the pharmacists will agree not to sell the drugs to them, but refer them to a doctor. The druggist says he has to make a living the same as we do.

There is one point that Dr. Keiger spoke of that I hesitate to touch on. He is right if the physician will treat properly. I refer to the general practitioner treating acute cases of gonorrhea. That is the time when a man needs the best service. If the physician will give it to him he can do it, but if he is not going to give him the best service, refer him to the specialist.

The State Board of Health has been endeavoring to find out to what extent syphilis was prevalent among a class of people who could not pay a physician for private treatment. Before entering a county, the medical society, if one exists, was visited; if not, members of the profession were conferred with to let them understand what we wished to do. I am glad to say that the work has been heartily endorsed everywhere, and is said to be strictly ethical and educational to the profession and to the public. Our clinicians have made about two thousand Wassermann examinations finding twenty-two per cent of them positive. About four to six visits are made to each clinic and after one demonstration is made we try to get the medical profession to handle the problem because we feel that they can do this better than others and they feel that responsibility for treatment in the community rests with them.

The venereal disease problem requires co-operation on the part of the profession, the health authorities, the pharmacists, and the public.

Dr. W. F. Hargrove, Kinston: Mr. President, Ladies and Gentlemen: Since this thing has been started in my county of Lenoir, there has been a lot of work done. The question has always been with me that we have never known when we have cured anybody. The question that was asked Dr. Keiger is important, when are these people non-infectious? If we can get them to the non-infectious stage, we have done our duty. I don't think we ought to keep a man and house him in for three or four years, but I would like to know when this man is non-infectious, but as a clinic as we are trying to operate, it looks like our duty ceases there, but sometimes the very man whom we are trying to work on spreads and carries it. It looks like when we get to the stage when we render these folks non-infectious that is as far as a clinic ought to go, because they can't be cured at a clinic. But, as to finding out when a man is cured that is a question, we cannot find out when they are cured. I don't know. We can go on and on, and in about a year examine them and find there is still infection, but they are non-infectious. That is the point I am trying to make, as soon as we can get them non-infectious from a public health point, it ceases there, that is what I want to say.

Dr. Mitchener: I would like to make a point by asking a question. Inasmuch as two or three doses and possibly even less of arsphenamine will close up the open lesions on a case of syphilis so the patient is considered to be non-infectious and since we know that these open lesions will again appear, should not the public health law be changed so that the syphilitic instead of being considered a public health nuisance only while the lesions are open he would be looked at also until a minimum course of treatment has been taken? In other words, should not public health laws demand treatment longer than they do at present?

Dr. Rankin:, The important thing for public health officers to remember in dealing with question of infection is that we are not after

absolute protection. We realize that's an ideal that is impractical and to reach that absolute ideal of perfection would be economically unwise. We may be able to stop ninety per cent with an expenditure of fifty thousand dollars, but to make the other ten per cent, we would have to spend another fifty or one hundred thousand dollars. Now, if we can do away with ninety per cent that is the practical thing to do. If we spend another one hundred thousand to do away with the other ten per cent, that's an impractical thing.

Now, to come back to the principle referred to. Of course, there are some people who have had six or ten doses of salvarsan, but the question before us as practical men is, are we going to the additional expense of stopping that minimum of infection in order to reach an absolute cure. We do well if we can follow a standard that will get rid of ninety per cent of it and just forget these exceptional cases.

Dr. Keiger, closing the discussion: The question asked as to rendering patients non-infectious is rather difficult to answer, because we have no criterion to go by. In the secondary stage it will take from four to six doses of arsphenamine to render the blood negative in the vast majority of cases. I judge from Dr. Rankin's question that he refers to the open sore, the eruption on the body. In my experience I have seen the rash disappear after one injection in some cases, while in others, it has taken two and again in others three, and in some four, before the eruption cleared up. Now, as to infectivity, I believe the patient would be rendered non-infectious after two doses, but there is always the constant risk. I don't believe we can set any standards for all cases, but the majority will clear up under three or four doses.

Now, as to the public health point of view, I believe that the clinic can render them practically non-infectious, but the patient should then be advised to go to a private physician for further treatment, for there are a great many cases that require as many as twenty-five or thirty to fifty injections to effect a cure.

Now, as to Dr. Mitchener's question about the general practitioner treating the acute cases. I don't think that anyone should attempt to treat syphilities unless he is adequately equipped and perfectly willing to give the best attention possible. The best course for any practitioner to follow, if he is not going to give his attention to a case, whatever it be, is to leave that case alone. If he isn't going to treat properly, then refer that patient to some other man in the community who will take the time and care to give adequate treatment.

RELATION OF THE COUNTY MEDICAL SOCIETY TO LOCAL HEALTH WORK

J. T. J. Battle, M. D., Greensboro

When this subject was submitted, it was taken for granted that it should be viewed from two angles—first, is the present relation entirely satisfactory? Second, if not what should it be?

A very superficial study develops the impression, if not the fact, that there now exists between the well or healthy people of every community and the regular medical profession a difference or rather an indifference which amounts to an estrangement as to their professional life; however, this is obliterated in times of sickness.

In justification of this opinion, besides the every day observation of the situation, is an article by Mr. Fred C. Kelly in the April number of the *Cosmopolitan* in which he proves to his entire satisfaction that "the only fair conclusion taking the proposition by and large, seems to be that doctors have had little influence on mankind one way or the other; the indications are that we are just about where we would be if there were no practicing physicians." The editor in commending this contribution says that Mr. Kelly makes two plus two equal five when he wishes to do so. Mr. Kelly's deduction as to the doctors is in keeping with his arithmetic. He attributes the present improvement of the general welfare of the people to evolution, and he proves the theory of evolution by the shape of a man's foot, saying it was made to fit around trees for climbing purposes and not to walk on. Mr. Kelly would reason, doubtless, that General Gorgas had nothing to do with the health conditions in Panama, but that since 1881 when the French were compelled to relinquish the project on account of malaria, and by 1904 man had become by evolution immune to malaria. It would be almost amusing to hear Mr. Kelly call for a doctor if he were to have a real good case of cramp colic.

Mr. Kelly's write-up will have no influence with the American people and they will continue to buy patent medicines at the cost of millions of dollars annually, and send for doctors whenever they are sick, even the Christian Scientists and other drugless practitioners. Mr Kelly's effusion is a straw indicating in some degree public opinion of the profession.

Who is to blame for this state of mind? Are the examining boards too lax and allow incompetents to pass them? Are the doctors sufficiently qualified to do first-class work? In answer to these questions, it must be admitted that the average physician is too often negligent in diagnosis, and if so, his treatment is necessarily guess work. This condition has not only permitted but actually paved the way for one or more cults to spring up overnight who are wielding some influence, yet their adherents are not trained in a single one of the fundamental branches of the practice of medicine.

What should be the relation?

When the Great Physician was upon the earth, His key word and great work was "service." He not only taught it but practiced it. When the Jew was on his way to Jericho, he very probably had gone out of his way so as to avoid going through Samaria in order not to become contaminated by coming in contact with the half breed and despised Samaritans; when overtaken and overcome by the robbers and left for dead, it was a Samaritan, although knowing himself to be despised while in health by this unfortunate man, rendered every assistance that he needed to restore him to health.

The Guilford County Medical Society is now going on record and arrangements are now well under way to follow, though afar off, the example of the Great Physician and give service to every man, woman and child in the county, and county lines may be wiped away unless our neighboring county societies claim that privilege for themselves in their own counties.

We are determined that the Samaritan shall not stand alone as the neighbor to the sick, afflicted or needy. Our plan is to work up interest at various strategic points in the county by newspaper articles, pamphlets on special subjects, lectures by the County Physician, pastors, through the day schools, Sunday schools, churches, moving pictures, etc., and on certain days a free examination will be offered and every one in the community will be urged to take advantage of the opportunity; when a diagnosis is made the applicant will be referred to his or her family physician. If complex cases difficult to diagnose should be brought up, then another appointment will be made and a specialist will be brought in and the case continued until a satisfactory diagnosis is arrived at, the case will then be referred to a physician of his own choosing. Up to this point, no fee has been charged.

The time has now arrived for the profession to educate the lay mind out of the superstition which is well nigh universal and the mysticism which is so extensively believed in as essential to the practice of medicine.

When we shall have taken all the people into our confidence and they are made to know that we are working for their good, then the relation of the county society to local health work will assume greater proportions, and the doctor will be held in higher esteem at all times, whether sick or well.

The profession should be and is now ready to give an affirmative answer to the question "Am I my brother's keeper?"

THE PROGRESS OF CHILD HYGIENE WORK IN THE UNITED STATES

Rose N. Ehrenfeld, R. N., Raleigh

In attempting to sum up the progress of child hygiene work in this country during the past year, Dr. Richard A. Bolt, General Director American Child Hygiene Association, raises a question as to "What we should regard as Standards of Progress"—whether higher ideals, fundamental principles, or advance in actual accomplishments?

He says progress does not consist in glowing reports with formidable statistics showing work done, nor does it necessarily mean that large appropriations have been allotted for child hygiene activities (although both of these are not incompatible and may be important items in real progress).

The *first thing* to determine is, *have we preserved our ideals and* really *held to our faith in fundamental principles? Have we been*

able to inspire the *community with these ideals? Have we* been able to assist in *putting into tangible form what we all believe* is for the *best interests of mothers and children?* in other words, have we kept the faith in the bonds of peace?

In judging of the progress of the past year Dr. Bolt *relies* largely *upon 1*: Reports of the affiliated societies of the American Child Hygiene Association. *2*: Correspondence with those actively engaged in local work and *3*: To some extent, upon personal conferences and observations. A valuable part of confirmatory evidence furnished by a Field Director who has personally come into close touch with the work of health officers, public health nurses, school authorities, etc., throughout the country.

In weighing the evidence presented from such sources he concludes it is impossible to paint a finished picture of the whole situation and selects outstanding features of the programs and activities, fitting them into a mosaic, which—in order to gain its perspective—must be viewed at a little distance rather than too critically close at hand.

With Dr. Bolt's permission, I have the pleasure of presenting his views of THE PROGRESS OF CHILD HYGIENE WORK in the United States.

"It is painfully evident to us all that the past year has been one of severe social and economic readjustment."

There has been a threatened, and at times, definite retrenchment along all lines. This has caused grave concern to those interested in child welfare and to some degree made uncertain the outcome of the work built step by step in the last ten or fifteen years. The cutting of appropriations and working staffs of a number of organizations has made it impossible for them to carry on the broader program planned.

Along with this has been a questioning on the part of the skeptical as to *just how much* infant welfare work was really accomplishing, and whether it paid for itself in cold dollars and cents. The old bugaboo of "whether maternity and child welfare work does not curtail medical practice" has again appeared. *Yet,* despite all this reaction and uncertainty as to the future, it can be truly said that on the whole those who have been most intimately linked with the child hygiene movement in this country have preserved their equilibrium and perspective and have continued their work with devotion and self-sacrifice.

1. The first sign of progress, therefore, is the preservation of our faith in the humanities against reactionary elements in some communities which no doubt will prove but ephemeral.

No matter how we may regard the present trend of social and economic forces we cannot overlook the fact that the past year has been one in which there has been a tremendous demand for knowledge and exact data along all lines of child welfare. (In some respects this great awakening to the needs of motherhood and childhood and the feeling that definite measures must be carried through in order to

meet them successfully is analogous to the widespread interest and loyalty during the war.) There has scarcely been a year in which more widespread, intelligent and persistent questioning and study have been given to problems connected with the movement.

The passage of the Sheppard-Towner Bill, the country-wide interest among all child welfare organizations, the number of articles appearing in magazines and newspapers, are simply indices of what the general public is thinking. This then may be

2. Taken as a second sign of progress—a widespread and intelligent interest in State and national measures for the protection of child life, with much public discussion and planning.

3. The third sign of progress has been the increasing recognition of the importance of careful health bookkeeping in regard to infant welfare work. (For a number of years a comparatively small number directly interested in infant mortality studies have realized the supreme importance of complete birth registration and the recording of exact causes of infant deaths.) (There has been a slow development in the appreciation of health officers, public health nurses and social workers for complete vital statistics.) The public themselves are becoming impressed with the necessity of knowing just what the trend of infant and child mortality really is.

The fact that it was possible to secure advance statistics from 519 cities, making possible the publication of a Statistical Report on Infant Mortality within six months of the opening of the new year, in itself shows the active interest of health officers and statisticians throughout the country. The widespread publicity given to this report through national press agencies shows that the public wants this information. (Although we are still considerable distance behind many of the European countries in the completeness of our birth registration, we have made considerable progress in recent years.)

1. One of the most outstanding features of progress has been the effort on the part of national and local organizations to come into closer co-operation, and to bring about a real co-ordination of their work. The necessity for such collaboration became very evident when the people learned that a host of organizations was attempting to cover practically the same field and in this attempt was accentuating certain phases of work and leaving wide gaps on other strategic fronts. "Philanthropic Doubts" as to the necessity for so many organizations, and as to the value of much of their propaganda have also been expressed.

The organization of the National Child Health Council with its advisory committees and co-ordination of field-work, and the beginning of the Child Health Demonstration in (Mansfield, Richmond Co.) Ohio, illustrate the progress made in national co-operation and co-ordination. In various communities throughout the country this has also been reflected. (The growth of Welfare Federations and Councils of Social Agencies has been notable, and the work of state and city councils for child welfare bring out the local phase of this matter.)

THERE IS NO QUESTION but that we are on the eve of a great advance in co-operative effort for child hygiene, from the Federal government down to the smallest community.

In an attempt to bring about this closer co-ordination of the work, organizations have discovered the necessity of mapping out a full, well-rounded program for child hygiene, rather than unduly stressing this or that phase of the work, so that it can be said that throughout the country communities are planning their child hygiene work on a much broader basis than formerly, and that they are attempting to work out a prenatal and preschool age program along as concrete lines as the infant hygiene program. The school age also is receiving renewed attention, and a more logical and consistent program for health education of school children is being worked out.

5. *Another marked feature of progress the* past year has been the extension of educational work for child health among nurses, social workers and health officers. In the universities of a number of States special institutes of public health have been held which included definite courses in child hygiene. (These courses have been well attended and a large amount of interest has been manifested on the part of those attending.) *Social pediatrics is also becoming more and more* a part of the regular teaching in pediatrics in a number of medical schools. In several States the university has carried on extension courses and has sent into the field some of the best men and women to conduct local demonstrations and give courses of lectures. (Hand in hand with this educational work has come a reduction of propaganda for child welfare, and in its stead educational publicity and the setting up of actual machinery for meeting the needs of the local community.)

(It has been encouraging and indicative of progress to note the requests from State and municipal Bureaus of Child Hygiene and from local communities for well trained people to conduct contemplated child hygiene work.)

6. *Another marked sign of progress, therefore,* has been the demand of State and local organizations for people especially trained along child hygiene lines, and the promotion of local interest by educational courses.

7. While the well-worked-out methods for the infant in arms are still widely applied, *there has been an extension of child hygiene in two other directions*: first in the prenatal period, and second, in the preschool, and school ages. Notable work along maternal lines in several large centres has demonstrated what could be accomplished in reducing maternal and neonatal deaths by well conceived and well executed plans. These have stimulated other localities to institute some form of maternity work. In some places this start simply consists in verbal instruction by the nurses in their regular visits to the homes. Other places have begun in an humble way maternity centres where the women receive their examinations and are followed up regularly by nurses. With the great interest now being taken in this phase

of the work we may expect a broad development for it in the coming years. It is thoroughly realized by those who have studied the problem that if we are to still further reduce our infant mortality rate, we must systematically attack the excessive mortality in the first month of life, and this can be largely accomplished by better maternity service.

For the preschool age, we have few precedents to follow. As it is now recognized to be a most important phase of child life—being that period in which most of the defects from which the child later suffers are acquired—we must either extend the work of the infant welfare centre, or push back the school hygiene program to cover the preschool age. In several places the school authorities have recognized the necessity of correcting a number of defects that occur in younger children before they get into the schools and thus the nursing staff of the schools have been called upon to look after a certain number of children of the preschool age. On the other hand a few day nurseries and kindergartens have realized that there was an excellent opportunity of extending their influences along health lines and they have provided medical inspection and nursing service. (A great deal remains to be done in the way of standardizing the methods used and of coming to some conclusion as to the most practical way of handling this preschool problem.)

The past year has witnessed a noticeable advance in our knowledge of the causes of nutrition in school children and the extent to which it occurs. Very definite steps have been taken in the way of proper education of the mothers and teachers along nutritional lines and also in the actual setting up of nutrition classes in very large numbers of the public and private schools throughout the country.

8 *There has also been a definite advance in standardizing* weights and heights in school children *and in our knowledge of what actually constitutes malnutrition in the school child.*

9. During the past year *there has been much study for the prevention* of *tuberculosis in infancy and childhood.* As practically all initial tuberculous infection takes place in childhood, this is a very logical development and *a real sign of progress.*

10. Our newer knowledge of syphilis, and the method of preventing its congenital form is leading to more strict attention to the possibilities of syphilis among pregnant women, and to its early and intensive treatment in hospitals and dispensaries.

11. Throughout the country there has been a sincere *effort* on the part of many *to secure more uniform record forms*—to do away with non-essentials, and to make the records really serviceable. (Even among those who have found it difficult to compile complete statistics relating to their work, there is an admission on their part of the necessity for standard forms. This is especially true in the case of preschool record forms.)

12. Throughout the past year *there has been a distinct recognition of the need of proper care in certain types of disorders* and special classes have been formed (here and there) in attempting to work out good clinic methods and standards. Most notable of these special classes have been those for the care of cardiac cases; for posture (including the after treatment of infantile paralysis) and for malnutrition. (In some cases these special classes have been formed simply as part of the regular clinical routine. In other places entirely separate classes have been provided not only for the examination in the clinics and prescription for treatment, but also for actually carrying this out. Special classes for malnutrition and posture have in a number of instances been extended to the public schools.)

13. Two features of the year's work in child hygiene *stand out in which we can see considerable progress, viz., dental hygiene and correction of malnutrition.* The need for better care of children's teeth is stressed everywhere, and communities in all directions are taking steps to correct dental defects. (This has been shown mainly along two lines: *First*, an attempt to supply sufficient dental help either through the dental societies, or by aid of dental hygienists to correct the simple defects, scale the teeth, and fill simple cavities for school children. The tendency has been to push the age at which dental care is given back earlier and earlier into the preschool age. Along with this has come a large amount of instruction along the lines of dental hygiene, and actual demonstrations in the public schools. *Second*, an attempt to secure better nutrition of children of preschool age and to give hygienic treatment in this period. There is a growing feeling that in order to be most effective dental hygiene should begin even in prenatal life, and that proper nutrition is one of the main factors on which we have to rely as a basis for sound teeth.)

The nutrition work has not only been carried out through voluntary societies, but is stimulated by Government Bureaus and through public schools. The educational side of nutritional work has also received a great impetus through attractive and definite instruction. The demand for literature, charts and programs along nutritional lines has been overwhelming. (Considerable, however, remains to be done to harmonize some of the programs, and to present a solid front in educational lines along nutritional lines.)

14. As child hygiene work has developed, and rural centres have become more and more interested in it, *a greater demand for an extension of child hygiene work into rural communities has come.* This has been met in several ways. Throughout the country there has been a growth in local health centres which have been set up as health educational centres. Through which the work of the public health nurse, and in many cases child welfare work has been extended. In several States an excellent beginning has been made in the extension to child welfare work to rural districts through (the State Bureau of Child Hygiene connected with) the State Boards of Health. This has been carried on through educational work by personal conferences of members of the child hygiene staff, and also through giving post-graduate

courses along child hygiene lines to the physicians in the smaller cities, and affording them facilities for consultation.

Another line of approach has been the use of traveling health dispensaries which have taken on two forms, one being used purely for education and propaganda, and the other for carrying on actual examinations of the children and for applying simple treatments. The traveling health dispensary seems to have justified itself as a method of education and a means of health communication between various isolated rural districts. (It is, on the whole, an expensive method, and it is questionable whether, with a well-equipped automobile truck, it is advisable to carry on actual treatments in the field, although dental prophylaxis and in some cases adenoid and tonsil removals have been carried out with good results.)

Another method which has been popular, but upon which there is now considerable difference of opinion as to its permanent results, has been the setting up of child hygiene clinics or demonstrations at State Fairs. (There is a demand for this and no question but that a large crowd can always be gathered around a booth in which baby conferences are being conducted, but the permanent good which can be accomplished on such occasions is questionable.) A number have raised the query as to whether it would not be better to utilize money and strength which are required for fairs, and set up regular conferences at various localities throughout the State over a much longer period of time. In other words the State Fair Conferences are more of an initial popular presentation of a propagandist nature but are not very constructive. Nor do they give to the mothers such permanent concrete results as smaller conferences at regular intervals.

15. In the country as in the cities there has been a great demand for educational films along child hygiene lines. (Although several films have been put out through the past year it is still true that this field is wide open for future developments.) The use of telling, well worked out films for fairs and nutritional exhibits throughout the rural districts would undoubtedly accomplish a great deal of sound educational work.

16. During the past year *there has been considerable activity along educational lines in regard to child welfare.* A number of States have appointed special Children's Code Commissions which were instructed to make a thorough study of child welfare laws, and to present their report at the Legislatures which met during the year. These were presented in many States. It is unfortunate that so many of the Children's Code Commissions laid the greater stress upon the care of the dependent, delinquent and defective children, and considered only incidentally the health phases of child welfare.

17. All studies during the past year *have pointed to the great need for better standards of work, and definite progress has been made in erecting certain standards for the health of the child in industry,* and in setting up minimum requirements for the care of the preschool child. (The previous standards set up for prenatal care and care of

infants have been thoroughly tested and found, on the whole, to answer the needs. It now remains to give a broader trial to these standards and see how they can be worked out in varied practice.)

18. *One of the distinct signs of progress along the preventive side has been the immunization of a considerable number of children*, between the ages of six months and six years, *against diphtheria infection*. The time has been too short for a complete judgment in regard to this immunization but the preliminary work has thoroughly justified the statement that this is an extremely important matter and one which should be adopted in future child welfare work. (It can be easily applied through the child welfare centres, or through kindergartens and day nurseries.)

19. *Continued progress has also been made in the extension of breast feeding* through a number of infant welfare centres in different parts of the country. Extensive campaigns which have been carried out in several large communities have thoroughly demonstrated that a larger number of mothers can be induced to nurse their babies at the present time than we had formerly supposed. This improvement has been made possible by early registration of births, and the follow-up of each newborn baby in these localities. This type of work has added materially to the value of infant welfare stations as centres of instruction not only of the mothers themselves, but of pupil nurses and physicians.

SUMMING UP THEN—the items of distinct progress during the year, we see, *first*, a continued and widespread interest and demand for educational material along all lines of child hygiene, but especially that which concerns prenatal and nutritional work and the child of preschool age. *Second*, while public interest has been aroused and maintained it now remains to follow up and crystalize it in well-worked out concrete programs which cover the whole period of infancy and childhood. *Third*, although in many places appropriations have been cut, enthusiasm and devotion to the work have caused a number to carry forward work already begun. *Fourth*, there has been a distinct advance in keeping of records and of reporting births, and *Fifth*, there has been developed a better understanding between individuals and associations, and a sincere effort has been made to bring about a co-ordination of child health activities.

DISCUSSION

Dr. Adams, Chairman: It seems to me that the subject is too important and the paper too well written to pass over without someone discussing it, and I shall be glad to hear somebody say something about it.

Dr. C. A. Shore, Raleigh: I am not well enough informed to adequately discuss this paper, but I do not think we ought to pass it by without paying tribute to the great work that has been done. I want to say for all of us that we do appreciate it, and realize the good work done.

Resolution adopted (offered by Dr. J. S. Mitchener):

WHEREAS, the House of Delegates has seen fit to appoint a committee to have under consideration the publication of the transactions of the Medical Society of the State of North Carolina; and

WHEREAS, the action of that Committee would be of great interest to the Section on Public Health and Education; therefore,

BE IT RESOLVED that our Chairman appoint a committee of three to confer with the Committee appointed by the House of Delegates which is considering the publication of the transactions of the Medical Society of the State of North Carolina.

Committee: Dr. R. L. Carleton, Dr. P. P. McCain, Dr. J. S. Mitchener.

GENERAL SESSIONS

TUESDAY, APRIL 25, 8:00 P. M.

HEALTH PLAY

"THE JEWELS OF CORNELIA"

Presented by Group of Modern Health Crusaders
Winston-Salem Schools

THE PROBLEM OF A CLINICAL MEDICAL SCHOOL IN NORTH CAROLINA

I. H. MANNING, M. D., CHAPEL HILL

The problem of a clinical school in North Carolina has been in the background for a number of years. The expansion of our two year school at the University into a four-year school is not only a logical development to which we should look forward, but from time to time conditions have developed which for the moment seem to threaten the future of this type of school. Twenty years ago a refusal of recognition was the threat, ten years ago the advancing entrance requirements, and now the limitation of enrollment and the tendency towards the introduction of clinical subjects into the curriculum of the first two years. The logical result of the standardization of medical schools and the introduction of the laboratory method in the preclinical and clinical subjects has been a decrease in the number of schools, a limitation in the enrollment of students, and a shortage of physicians, at least in the rural districts. In the progress of medical science and practice, which has been most gratifying to all physicians, the future of the two-year medical school may be a matter of purely academic interest, but in the problem of an adequate supply of physicians the expansion of such schools may be of vital importance in their respective localities.

The advancement of the entrance requirements and the increasing cost of a medical education have not suppressed the desire of our college students to enter the field of medicine. There are more students preparing to study medicine than ever before and as our colleges grow the number will continue to increase. Their problem is to get into a medical school. I am told that one of our large eastern schools refused admission to one hundred and fifty applicants last fall and I am quite sure all of the medical schools admitted to their full capacity and refused many. The shortage of physicians is clearly not due to a lack of men wishing to enter the profession. The opportunity is being limited.

The limitation of enrollments has been necessitated by the introduction of the laboratory method in the preclinical and clinical subjects. The capacity of the laboratory and the facilities for individual or small group instruction in the clinic determine the capacity of the school. In a survey made by the Council on Medical Education

of the American Medical Association the total capacity of the sixty-six Class A schools was found to be 15,925, and by certain minor additions this number could be increased to 17,425. The total number of graduates that may be expected from this enrollment would be approximately 4,000 per year. From such a statistical study one may reach the conclusion that even with the limitation of enrollment we have an adequate number of medical schools in this country.

A statistical study will also demonstrate that the ratio of physicians to population throughout the country is 1 to 720 and doubtless our cities are overcrowded, but these facts do not quiet the general chorus from the country nor satisfy the proper demands of a large and important element in our national life, the rural population. The drift from the country to the city has affected all classes irrespective of occupation and, one may venture to predict, will continue until rural life affords comforts and opportunities approaching in some degree those to be had in the cities. Our medical graduates with their educational background and scientific training are not content with the limitations of the country and one must sympathize with their point of view. Moreover, the country practice is essentially a general practice and the undergraduates hear so much of the difficulties of professional advancement except in restricted fields that a general practice becomes unattractive. North Carolina is essentially a rural State; there is a drift from the rural districts to the towns within the State and from the State to the cities of other States. From a group of 568 students who have attended the University Medical School and whose addresses are known 167, or 27.6 per cent, are practicing outside of the State. Of the 814 applicants licensed by the State Board of Medical Examiners from 1910 to 1919, inclusive, we have calculated that 185, or 22.7 per cent, did not practice in the State. There has therefore been a drift out of the State of approximately 25 per cent.

Will the establishment of a clinical school tend to provide an adequate supply of physicians for the State? There is an impression that graduates from a medical school tend to locate in its vicinity. Whether or not this is a demonstrable fact I am unable to say, but in looking over the list of our own students who have settled outside of the State I find that there are twenty-one practicing in Pennsylvania and New Jersey, all of them graduates of the medical schools of Philadelphia. Aside from any advantages that may accrue from the location of a school within the State, I think we shall agree that the physicians who will practice in the country must have come from the country, and I am quite sure that the physicians who will practice in North Carolina must have come in large measure from North Carolina. Can we depend upon the schools of other States to provide an education for our own doctors? The cost of a medical education to the school is approximately four times the receipts from fees paid by students. Is this not too large a contribution to expect from other States?

The problem of establishing a clinical school in North Carolina is more complex than perhaps you may imagine. I am quite sure that in spite of the independence of the average unreconstructed North

Carolinian and his resentment of any interference from the outside in the conduct of his affairs one will realize that no educational institution can set up for itself standards markedly at variance with the standards prevailing throughout the country. I do not believe the physicians of North Carolina will support an institution whose standards are below the accepted level. I assume, therefore, that we must have a first-class school or none.

There may be wide variations in our conception of a Class A school. Certainly if one looks over the list of the sixty-six existing in this country very great differences, in certain respects at least, may be observed. It is most gratifying that enormous funds are being expended at some of these institutions for the advancement of medical education and medical science and we may covet for North Carolina a Harvard, a Michigan, or a Cincinnati, but we are not entertaining any grandiose delusions at this time. If this type of school is an ultimatum the situation is hopeless. However, there are certain essentials, certain fundamentals, which are indispensable.

At the outset we must recognize the two functions of a medical school: First and primarily, the training of students for the practice of medicine; and second and secondarily, the advancement of our knowledge of medical science. I feel sure these dual functions are generally accepted, but in practice, and certainly in the minds of some teachers, the order of emphasis is reversed. However, the medical school that does not provide for both teaching and research in the selection of its faculty and equipment is doomed to mediocrity if not failure.

The teaching of clinical medicine has made rapid progress within the past few years. The didactic system has given place very largely to bedside instruction, an improvement for which we should be devoutly thankful. Who has ever learned to recognize a crepitant rale, a pericardial or a pleuritic friction sound from the back bench of an ampitheatre? A prerequisite to the establishment of a clinical school, therefore, is a hospital of such capacity as will furnish a sufficient variety of clinical material for teaching purposes and provide such equipment and laboratory space as is required in the practice and teaching of modern medicine. I wish to emphasize the three essentials: First, a hospital of sufficient bed capacity; second, clinical material of sufficient variety available for teaching purposes; and third, equipment for the teaching of modern medicine. This is the real problem in the establishment of a clinical school in North Carolina.

In the large cities there are such a number of hospitals and such a wealth of clinical material that one may imagine the problem for a school so fortunately located to be very easy of solution, and yet a municipally-owned and controlled hospital, or one privately endowed and controlled by an independent board of directors, is far from satisfactory for teaching purposes. The construction and maintenance of a hospital which is primarily for the care of the sick is unquestionably a municipal function, if not an obligation, but it is equally true that a hospital for teaching purposes must be absolutely and

unequivocally controlled by the medical school. The control of the hospital by the medical school is not in the least incompatible with its primary purpose; on the contrary, such control will bring to the sick the very best medical service that can be assembled in the faculty of the school.

In a rural State such as North Carolina, in which there are no large cities and in which the clinical material is scattered over a relatively large area, the problem is far more difficult. Is the large city hospital an essential, a *sine qua non*, or does it not depend after all upon the character of the work done? Of the latter we have abundant evidence in the marvelous success of the Mayo Clinic, of the University of Michigan and University of Iowa and of our own Sanatorium for Tuberculosis, all of which are located in relatively small towns. I do not question a sufficient supply of clinical material in a properly conducted hospital conveniently located in North Carolina.

The construction and maintenance of a sufficiently large hospital is an expensive undertaking. We have recently sent a questionnaire to certain universities and hospitals where the data on the cost of construction and maintenance could be based on some fairly up-to-date experience and we have found the cost of construction to be in the majority of instances between $3,000 and $4,000 per bed and the maintenance quite uniformly around $3.50 per bed per day. These figures are based on the supposition of fireproof construction with a reasonable space allowed for laboratory and teaching purposes.

In 1915 a committee appointed by the Council on Medical Education to suggest plans for a reorganization of the teaching of clinical medicine recommended that a medical school should have a hospital with a minimum capacity of 200 beds. There are only two schools of the Class A group that have substantially less, the University of Kansas and the University of Maine. In the southern group we find that the University of Texas at Galveston has 316 beds, the University of Georgia at Augusta 250 beds, Emory University at Atlanta 285 beds, costing $1,500,000, the State Medical College of South Carolina at Charleston 248 beds, the University of Virginia at Charlottesville 200 beds, the University of Tennessee at Memphis (in the two hospitals in which it has teaching privileges) about 500 beds. Should we undertake the establishment of a clinical school with less than a 200-bed hospital? Conservatism might suggest that we begin on a smaller scale and enlarge as the experiment succeeds, but would not the experiment be doomed to failure at its outset?

Accepting for the moment the more ambitious plan, the next problem is to obtain the funds with which to construct and maintain such a hospital. This problem may be met in various ways:

(1) By private endowment. Since vast sums of money have been donated in recent years for the purpose of medical education, there has been a general feeling that we may look to this source for all or a large part of the funds for our purpose. It is idle, in my judgment, to expect help from this quarter until we have done something in a very substantial way for ourselves. North Carolina should not be regarded as an object of charity.

(2) From municipal funds. Dr. Bevans, chairman of the Council on Medical Education, regards the construction and maintenance of a hospital as altogether a municipal function, and this opinion is shared by many medical educators and in practice by the majority of medical schools. It has been very difficult to get and retain such control as the school should have over municipally-owned hospitals (Cincinnati is a brilliant exception), and under other conditions they are unsatisfactory. In view of this, the feeling is growing that the school should own and control its own hospital. But obviously the expense of maintaining the school will be very greatly increased.

(3) From State funds. In a rural State such as North Carolina, where there are no large and wealthy municipalities, the State must be expected to provide the funds for such an enterprise. This view has been taken in a number of States, some essentially like North Carolina and others with large cities. The most illuminating illustration is perhaps Iowa. In 1897 a State-supported general hospital was built at the University in Iowa City, which has at this time a population of less than 12,000, primarily for the purposes of the medical school. From time to time additions have been made until now there is a total of 650 beds in the University Hospital. Iowa has a population of approximately two and a quarter million; its largest city, Sioux City, has a population of 71,227; and the amount of its agricultural and manufacturing wealth is about the same as that of North Carolina. Michigan is perhaps the most striking illustration of the success of such an enterprise. The State has at Ann Arbor, a town of less than 20,000, a university hospital with 400 beds and is at the present time building an addition of 600 beds at a cost of $3,500,000. We are informed that Wisconsin will build in Madison, a town of about 38,000, a university hospital to cost $1,500,000 or more. (Incidentally, there is already a general hospital in Madison with a capacity of 115 beds, but the University of Wisconsin has not thought it wise to expand its two-year course into a full four-year medical course.) The idea of a State-supported general hospital appears to be growing in popularity in the middle and far west where public policies are unhampered by traditions and new ideas may be tried out in a new soil.

I do not mean to suggest by reference to the above instances that in the event the State should build a hospital it should be located in Chapel Hill. In respect to this point there are divergent views in so far as medical opinion is concerned. When it so happens that the university is located favorably there can be no question of the desirability of locating the medical school near the university. Vanderbilt will spend quite a large sum to move its school across the city of Nashville. Tulane is trying to raise the funds for the same purpose. Quite a number of universities, however, have placed the medical school in cities where it is believed clinical material is more easily obtained. The University of Colorado is perhaps the last one to consolidate its school in Denver. It has spent for what the dean describes as a modest beginning, $1,500,000. Cornell has its medical school in New York

City, the University of Texas in Galveston, the University of Georgia in Augusta; Harvard College is in Cambridge and the Harvard Medical School in Boston.

Perhaps you will be more interested in the conduct of the hospital than in its location. At the University of Michigan patients are admitted under the following regulations:

"1. Those whose admission is provided for by special statute, or patients sent on order from the Superintendent of the Poor, supervisor or city official, being authorized to issue such an order.

2. Emergency cases.

3. All students in actual attendance at the University and at the Michigan State Normal College.

4. All persons bringing letters recommending their admission from their usual medical attendant.

5. Persons not included in the above four classes in accordance with rules prescribed by the Regents may register for an examination and admission by making an affidavit to the effect that they are unable to pay the minimum fee of the profession for such medical or surgical service as may be required.

6. Private patients for Surgical, Medical, and X-ray Departments." (Iowa has essentially the same regulations.)

In my own judgment, the latter group should be omitted or included under No. 4. Would the profession in North Carolina support a hospital conducted in accord with such regulations?

One may foresee some competition, some rivalry perhaps, between the municipal and privately-owned hospitals and such a State-supported general hospital as has been projected. It would appear, however, that such institutions would be amply protected by the fourth clause in the Michigan regulations, viz., "All persons bringing letters to the superintendent recommending admission from their usual medical attendant." This places the matter in the hands of the physicians practicing within the State. There are a large number of charity and semi-charity patients in need of hospital attention who cannot be regarded as a source of revenue to any hospital. The daily average of beds occupied in the hospitals of North Carolina from which records are obtainable is 61.77 per cent. Is it not from the fact that many of our sick are unable to meet hospital charges? An additional hospital of 200 beds would make very little impression upon this group of patients.

Should such a hospital be restricted to semi-charity and charity patients? If so, how shall it be supported? At the rate of $3.50 a bed per day we may easily calculate the cost of maintenance to total about $250,000 per year. Should we make a uniform charge for those who can pay and collect it from the patient and no charge to the indigent and ask the State to pay it? The latter plan seems to be in

practice at the University of Michigan. The State, however, has the right to collect from the county from which the patient comes. Iowa allows the hospital $3.50 a bed per day.

Do you think we can persuade the legislature of North Carolina to appropriate a million or three-quarters of a million dollars for the purpose merely of establishing a clinical school in which to train doctors? Would the proposition make a stronger appeal if placed on the ground that such an institution would provide medical service for a large group of people who are not now receiving adequate service?

In conclusion, let me say that I have presented this problem as free of prejudice and personal opinion as possible, largely to obtain as free and frank a discussion as possible from the members of this Society. If you are interested in this proposition, whether your views are favorable or unfavorable, we should like the benefit of your judgment. It is quite as important to know that you disapprove as to know that you approve—in fact, I think it more important to know that you disapprove if such is the case. If there is any further information that you may desire, I shall be very glad to give it if possible.

DISCUSSION

Dr. John Q. Myers, Charlotte (Chairman *pro tem.*): We have listened to this very fair and able presentation of this subject, and the speaker has asked for discussion and would be very glad to receive it. The Chair therefore announces that this subject is now open for discussion. Would some one care to discuss it, or to ask the reader a question? I may say to Dr. Manning that, of course, the question is new and has not been presented before so ably by anybody that perhaps most of the fellows have hardly made up their minds on it, but we should be glad to give a few moments to doing so.

Dr. R. H. Lewis, Raleigh: I hope that the members of the profession will express their views now, as this is the only opportunity we have to get the sentiment of the profession, and we do hope you will let us hear how it strikes you as to whether we shall have a four years course in North Carolina. At present it looks as though it were going to be a necessity. Of course, the ways and means will have to be decided on later. But I hope that some at least of the gentlemen will let us hear from them and tell us how it impresses them. They all have medically trained minds and we would like very much to hear from them.

Dr. L. B. Evans, Windsor: As a University alumnus and a member of this body, and as a North Carolinian, I wish to say that I believe that, if it can be carried out and made a first-class school, a Class A school, all the people of North Carolina will want it and will take to it. I believe that such a school will be a great blessing to the State, and in the end, also be a financial success to the State; I mean, will return to the State all that it puts in it, and more.

I know what a hard time I had in getting a medical education. I am going to tell a joke that my good friend, Dr. Lewis, told me; it is another one of the St. Peter jokes: When Rastus got to the pearly gate and asked St. Peter if he could come in, St. Peter asked him what kind of a nigger he had been. Rastus dropped his head and said, that he had been a mighty bad nigger, that he had stolen a lot of chickens in his life, that he was the worst chicken thief in all that part of the country. St. Peter said, "That's all right, Rastus, walk in, I had a little trouble with a rooster once myself."

And I had trouble myself in getting an education, and I know what it means in time and money, and I want the boys of North Carolina to have a better chance than I had.

Dr. E. J. Wood, Wilmington: I believe that the fact could hardly be appreciated unless we were all familiar with the medical hospital situation throughout the State. I have just come back from a visit to New York and Philadelphia, trying to find internes for our hospital in Wilmington, and they haven't enough up there for themselves. Not only would such a school remedy that difficulty in North Carolina, but it would be establishing a necessary thing in this State. There is no reason why, with the large hospitals we have, all of them should not be Class A hospitals. And I believe that such a scheme as this would affect immediately and directly every community in North Carolina, it would raise the tone of the medical profession in North Carolina, it would bring to the poorest and the most isolated the best medical attention that could be had. I think there has never been in North Carolina such a wonderful opening up for our profession as we have before us this evening.

Dr. Addison G. Brenizer, Charlotte: I don't see why we should not educate our doctors as well as our lawyers in our own State, unless it is that the medical profession is so expensive that we are afraid to take it up. For that very reason some move should be made to educate our North Carolina doctors ourselves. Being such an expensive undertaking the man who has to go North to acquire his profession is put to such a considerable expense that after being put to that expense he stays up there to practice, instead of coming back to where he started from. Lots of our medical men are lost to North Carolina in that way, the man feeling that after having that expense he ought to drift to some big city. In South Carolina and Virginia we have quite a different state of affairs. They have medical schools. Why should not our State, which is certainly ahead of South Carolina in every other way; why should we not educate our doctors in our own State? I don't see why we should not.

Dr J. P. Munroe, Charlotte: As a true North Carolinian and as a member of this Society, and as one who for a good many years has been familiar with the medical situation in North Carolina, I know this, that when a man starts out to get a medical education in North Carolina he has to be fixed very well financially before he can get

through. This is all true because North Carolina is not furnishing the facilities for the last two years. I wish, therefore, to add my hearty endorsement to any suggestion that would look toward the establishment of a full course university.

Dr. A. J. Crowell, Charlotte: We have in our midst this evening a man who is in touch with medical education throughout the United States—a visitor who is an authority on medical education. I would be glad indeed to hear from Dr. Billings on this subject. He knows the necessity of such an institution in every State. North Carolina is not the poorest State in the United States, and almost every other State has a medical college. I am sure we will all be glad to hear from Dr. Billings.

Dr. Frank Billings, Chicago: Ladies and Gentlemen: I suppose that if years of service in an attempt to teach medicine will qualify me, I may be fitted to speak to you on this subject.

You are all aware, of course, of the fact that the medical profession deserves the credit of any standard of medical education which exists in the United States today. I am going to tell you something about that tomorrow night.

Now, it happens that with the standards of medical education in this country as they are today, a good many schools unendowed have been unable to adequately teach medicine because of the cost of modern education. It costs a medical school under the present conditions four times as much as the tuition fee charged. Now, in part, that is due to an error in the curriculum, in my opinion. Modern medicine is so complicated, or involves such an enormous amount of knowledge that no human intellect could apply it, and there has developed in the curriculum of the medical schools an attempt to teach those special refinements to men who will never use them, with extra cost of space for laboratories and for teachers. Now, I hope the time will soon come when we will simplify the curriculum and attempt to train and educate the undergraduate medical student in the fundamentals and principles of medicine to make him a good resourceful doctor and upon which he can afterward fit himself for a specialty if he desires.

I have been talking with some of the members of the Society about the situation here. You have a large State—a wealthy commonwealth. I understand that you have approximately three thousand licentiates in the practice of medicine in this State, and because of the present and past difficulties, you hesitate to go on and complete the medical education of the boys and girls of North Carolina. I had not the pleasure of listening to what the proposed plan is, but you do not need so very many hospital beds, to give adequate medical instruction to students.

Just let me tell you this little experience. During the war I was on duty in England. I was over there to look over the boys in the American camps, and also to look into the English hospitals to see what kind of work was being done there in reconstruction, and in that capacity went to Colchester to see the clinic conducted by Sir

Thomas Lewis. He had a camp there for all of the English soldiers who were on furlough because of alleged disease of the heart, and he had there on an average all the time, fifteen hundred men. Sir Thomas Lewis, who, has done so much to give us our present knowledge of heart rhythm, did not have at that camp a polygraph or an electrocardiograph. The man who did so much investigatory work, made the examination and tested the function of the heart by the simplest means. In the ordinary practice of medicine you do not need all those diagnostic refinements. The general practitioner in North Carolina would not need to know how to use them. But, the hospital must be equipped for research and investigation; the spirit of research must be there.

Now, as to practicability. You have fifty thousand people in this town. At the minimum, that means that ten thousand of your people here are ill or injured annually and require a doctor. Now, with us forty per cent of the people are unable to pay fees, more than that in Chicago. Dr. W. J. Mayo told me that forty per cent of the people that register at his clinic are unable to pay fees. They pay a per diem in the hospital, perhaps, but are unable to pay fees. Three thousand of your people would be clinical material annually. If you have three thousand people who could be taken care of in a hospital and its outpatient department, you would have enough material to teach well fifty or more students of the clinical class. If you developed that scheme and gave a reputation to your clinic, you would more than treble the patients within a few years from people of distant counties. Those of you who have not been engaged in teaching, have had a feeling that has been so prevalent, that teaching in hospitals keeps the patients out of hospitals. One of the largest hospitals in Chicago is a Jewish institution, and I was a member of the consulting staff. At every meeting that I attended I asked the hospital to teach medical students, and the answer was always: "No, our poor Jews will not stand for it." Not long ago I met the president, and he said, "I would like to talk to you about our hospital. For over twenty years you asked that we teach medical students; that a hospital ought to be a teaching institution." He said, "We have now found that a great many of our poor Jews come to us when they have no money, and when they have money saved they go to the Presbyterian Hospital. When we inquired why, they told us that they went there because the professors and students examined them." And he said, "We are converted; we shall become a teaching institution." I have had, time and time again, private patients in the hospitals say, "Will you take me to your clinic and teach the students what you can about me?"

Now, another thing, has the medical profession as represented in this organization developed that spirit of organization and zeal that will put a good thing forward? That is all. It is up to you.

Dr. R. F. Leinbach, Charlotte: There has been surprisingly little discussion of Dr. Manning's important paper by the doctors who are present tonight. I am sure this is not because of lack of interest in the question, but on account of the unfamiliar nature of the problem.

It is a vital problem, and those who have given thought to it believe that it may become an acute one in the next two or three years.

I move that Dr. Manning's paper be referred to the House of Delegates tomorrow morning and that a committee be appointed to investigate this problem and report to this Society at our next annual meeting.

Dr. J. M. Templeton, Cary: I have read somewhere that at their banquets the ancient Egyptians had the servants pass around a skeleton to remind them of their mortality. I want to say that I am just as loyal to the medical profession of North Carolina as any man in the State, and I will go just as far as any man in this State to carry out any undertaking that will be beneficial to our profession in the coming years, and it is not my purpose to pass around a skeleton; but, I want to say this, Mr. Chairman, that while I am with you and I am going to do all I can to carry out whatever plan you may formulate, this is a bad time to undertake anything of this kind with the expectation of carrying it through at once, because, as you fellows who practice among the people know, there never was a time in North Carolina when the people were more inclined to kick against any expenditure that is not absolutely necessary than they are now, the financial situation being what it is.

While I am with you heartily, I want to point you to the difficulties before you when you go before the Legislature of North Carolina and the people of the State. We shall need all the enthusiasm we can arouse, all the firmness; we shall need everything we can get to carry this over, and I am just warning you of what we are going to go up against and what will be against us.

Dr. Leinbach's motion seconded and unanimously carried.

Wednesday, April 26, 8:00 P. M.

Dr. H. A. Royster, President: For the last few years, ladies and gentlemen, it has been the custom of the Medical Society of the State of North Carolina to present at the second or third general session of our annual meeting three addresses, one in medicine, one in surgery, and one in public health, the great trinity of the medical profession.

I introduce to you this evening, as the first speaker, who will deliver the address in medicine, an eminent physician, who is a Canadian by birth, an American by adoption and a Philadelphian by location, a Professor of Medicine in the Jefferson Medical College, author of books and monographs on various subjects, a splendid clinical teacher, a real doctor, Thomas McCrae.

Dr. Thomas McCrae, Philadelphia: Mr. President, Ladies and Gentlemen: It is first my very pleasant duty to express my appreciation of the honor conferred upon me in being asked to appear before this Society. It is a true pleasure to come to North Carolina and meet the members of the State Society, particularly because I

have so many friends among the profession here, and it gives me particular pleasure to meet so many of my former students. I just wondered today, when I saw a number of former students at the Jefferson College before me, how much I am responsible for the profession of North Carolina. It seems to me that a certain amount of responsibility is mine.

It is also a pleasure to bear testimony to the character of the men, the students coming from this State to Jefferson. As you all know, many come from North Carolina to Philadelphia, and we have been impressed particularly by the character of these men and by the training they have had. They come extensively prepared with regard to their work.

SOME OF THE PROBLEMS OF THE INTERNAL SECRETIONS

THOMAS MCCRAE, M. D.
Professor of Medicine, Jefferson Medical College
Philadelphia

In a general discussion concerning some of the problems of disturbance of the glands of internal secretion, there is a large field of choice as to the special questions to be considered. As there is no need of discussing the well-known disorders, I shall keep to some general matters and take up some points which seem likely to be of aid in our daily work. The whole subject is a most fascinating one and unfortunately lends itself to romance so that some of the writings on it deal more with fancy than with fact. But we should try and separate the wheat from the chaff, a task which would be easier if writers would make plain what is fact and what is theory. In all probability we are only at the beginning of our knowledge of this subject and no one can tell what the future holds. It is well to be humble, especially when we remember how many unsolved problems there are in connection with the thyroid gland, the one of which we have known for the longest time and on which so much work has been done.

The problems are being attacked from many sides and much advance has come from experimental work, but what we need most is more carefully controlled and critically studied clinical work. In this the general practitioner can aid to a considerable extent and there is no reason why he should not add materially to our knowledge. Take the subject of the menopause, for example, and think how many unsolved problems exist in connection with it. Here is a field in which the man in general practice, who is able to follow his patients and keep them under careful observation, can do much which a hospital physician cannot.

The importance of the endocrine glands cannot be over-estimated and our increased knowledge of them has markedly widened our ideas of development, behavior, normal function, and disease. It was John Wesley, I think, who said when he saw a drunkard in the gutter,

"There but for the grace of God lies John Wesley." So we looking at a caricature of humanity in the shape of a cretin might say: "There but for a healthy thyroid gland goes myself." How much these glands regulate our daily behavior it is difficult to say, but undoubtedly they do to a considerable extent. Some would have it that certain racial traits are the result of the influence of the endocrine glands and in some particulars doubtless they are right. Much of what is regarded as instinct is governed by these glands, as witness hibernation.

Certain important relations between mental diseases, especially dementia præcox, and the sex glands have been demonstrated by Sir Frederick Mott.* He regards a primary regressive atrophy of the testicles and ovaries as indicative of a hereditary deficiency of the genetic vital impulse or an inborn germinal defect. In the female this may manifest itself after the birth of the first child in puerperal toxæmia passing into dementia. In such cases the ovaries are sometimes small and very fibrous without any Graafian follicles. The ovum shows a deficiency in chromatin substance. In males with the failure of spermatogenesis there is pigmentary degeneration of the interstitial cells—a sign of senile decay—in 25% of the dementia præcox cases dying in adolescence.

With regard to disease of these glands, it was natural that the marked structural changes should receive attention first. We are still concerned with these but more attention is being given to functional changes or what we term such in our present knowledge. In this connection we have to remember that much of the working of these glands goes on unknown to ourselves and this brings us to the question of their close association with the sympathetic nervous system, the importance of which we recognize only when it goes wrong. The two are closely associated and much of what we often regard as internal gland disturbance is really in the vegetative nervous system. Much of the daily working of our bodies in health goes on entirely outside our consciousness. The sensory functions are abolished during sleep but the autonomic nervous system must be on duty. In somewhat the same fashion we may say that much of our conduct is automatic and as it has been put by W. L. Brown, "Internal secretions regulate instinctive behavior." The association between the visceral nervous system and the endocrine glands is a very close one.

The sympathetic proper is katabolic, the para-sympathetic anabolic. The latter has much to do with the processes of digestion while the sympathetic proper is concerned with the utilization of the energy so acquired. During sleep, while energy is being stored up, the parasympathetic is in control. Certain glands are associated with each of the divisions of the vegetative system. The thyroid, pituitary and adrenal glands have a close relationship with the sympathetic; the glands of the digestive system with the parasympathetic, and possibly also the parathyroids.

As regards the association, where does disturbance usually originate, in the nervous system or in the internal secretion mechanism?

*British Med. Jour., 1922, i, 463.

It is not possible to give a definite answer which always applies. Is it not probable that in one case the sympathetic system is primarily responsible and in another the internal secretions? Is it not possible that in the same individual one is responsible at one time and the other subsequently? As examples of the influence of internal secretions on the sympathetic system certain effects of disturbance of the function of the thyroid will occur at once. A patient with hypothyroidism among other complaints may have obstinate constipation which may disappear at once on the administration of thyroid gland, or in the reverse condition we find diarrhœa as an important sign of overactivity of the thyroid.

Let us discuss some of the influences which bring about disturbances of the internal secretion glands.

1. *Nutrition.* The endocrine glands influence digestion by their effect on the sympathetic nervous system and by their hormones. Disturbance in nutrition, as by improper food or lack of vitamines, may influence both factors and so establish vicious circles. There are many examples: lack of thyroid secretion may cause lack of digestive secretions; the pituitary has an influence on the muscles of the intestines; the salivary glands, the liver and pancreas may all be influenced. Evidently the disturbance of the digestive system will result in subsequent alteration in metabolism and so the disturbances reinforce themselves. Another factor comes into play, the influence of the vitamines, these mysterious but necessary substances. There is good evidence to show that lack of vitamines results in disturbance of endocrine function and through it of metabolism. The work of McCarrison* shows that with food deficiency the adrenal glands tend to undergo enlargement and the thyroid to atrophy. As he says, "dietetic deficiency means endocrine insufficiency." The influence of food deficiency on the sex glands is well established and the function of the thyroid and parathyroid glands suffer. As concerns the latter we have the well-known facts regarding tetany and other calcium metabolism disturbance. The pituitary glands show a tendency to compensatory hypertrophy. The same is true of the adrenals which hypertrophy in consequence of many forms of food deficiency—of special interest are McCarrison's findings of the results of a scorbutic diet in guinea pigs. There is marked enlargement with degenerative and hemorrhagic changes, and also lack of functional capacity. It is evident, therefore, that we have to regard the diet both in its ordinary constituents and also in its vitamine content as an important cause of disturbance of function in the endocrine system. There is much work to be done before this phase of the subject is thoroughly understood.

2. *Infection.* The influence of infections, either by bacteria or their toxins, is well recognized and in the disturbances of the thyroid gland more and more importance is given to this as an etiological factor. We are aware of the effect of some infectious diseases, such as typhoid fever, on growth, probably through an influence on the

*McCarrison, R.; Studies in Deficiency Disease. Oxford Medical Publications, 1921.

pituitary gland. Much stress is placed also on the influence on the adrenals and their insufficiency is thought by some to be responsible for the low blood pressure in certain diseases. So far as clinical study goes the thyroid gland especially suffers from focal infection, particularly from the mouth and tonsils.

3. *Nervous influence.* Here, so far as we know at present the most definite proof concerns the thyroid gland and there seems no doubt of the influence of psychic factors in causing disturbance in its function. The path is by the sympathetic system which has so close an association with the gland. Once established the condition tends to advance as the sympathetic disturbance affects the thyroid and this in turn lowers the threshold of sympathetic disturbance. As regards the other glands we have little that is definite.

4. *The influence of developmental factors.* This plays a part in the thyroid, especially in the form which we term adenomatous goitre. The work of Mott has been noted in which he found evidence of an inborn germinal defect in the testes and ovaries. We know little of such changes in other glands but they seem perfectly possible and our lives may be decided largely by the character of the glands which we brought into the world with us.

There is no question that in many cases more factors than one are operative but it may be impossible to divide the blame properly. A patient may have a focus of infection which affects the thyroid and at the same time suffer from nervous disturbance with additional resulting influence on the gland. The tendency to the formation of a vicious circle must always be remembered.

5. *The influence of one gland on others.* Here we are on difficult ground and it is easy to indulge in speculation—some justified and some not. The question may be asked whether there can be disturbance of the function of one gland only or whether disturbance of one gland does not always involve some interference—even slight—with other glands. At present it is impossible to answer this question. Certainly in many cases the evidence seems clear that there is definite alteration in the function of other glands. A case in example may be quoted:

REPORT OF CASE

The patient was a single woman, aged 34, seen in March, 1922, who had some enlargement of the thyroid dating certainly from the age of eighteen. She herself had never noticed this until her attention was drawn to it at the age of thirty. A physician who was a relation but not her medical attendant, stated that there had been no special change in the size during all these years. The symptom for which she sought advice in 1920 was the cessation of her periods which occurred in 1919. Before this she had been working very hard under a good deal of strain, her periods had been irregular for a time and during the previous year she had gained considerable weight. At this time she was given whole ovarian gland extract, following which the periods returned and continued at regular intervals.

Somewhat later she was given very small doses of thyroid gland extract in addition. She did well for a time but in 1921 began to have numerous headaches of the type suggestive of pituitary disease.

Other points of importance are that she had noted at times that there was some change in the skin, which had a swollen look and she says "felt as if it was stretched." She had noticed also that she was more susceptible to cold in the last two years and required heavier clothing.

On examination (1922) the general condition was excellent, but the appearance suggested slight myxœdema, the thyroid showed some enlargement which was not extreme, the gland was of normal consistency, and there was nothing to suggest Graves disease. The skin reactions were predominantly of the vaso-constriction type and there was a well-marked "white line." The systolic pressure was 108 and the diastolic 70.

In this patient there seems no question of polyglandular disturbance. There is no doubt of the thyroid being involved, the disturbance of menstruation is suggestive of the ovary being concerned, the pituitary is under suspicion, and the low blood pressure and skin signs are certainly suggestive of adrenal insufficiency. I am not sure how much is gained by discussion as to which gland was primarily at fault or how much of the disturbance is to be assigned to each gland. In this case it is evident that there are several possibilities as there is evidence of disturbance of the thyroid, pituitary, adrenals, and ovaries.

Let us discuss some points which seem to be of useful practical importance.

THYROID GLAND

(1) *Prevention of Simple Goitre.* The work done by Marine and his co-workers is worthy of special emphasis. It has been shown that in the vast majority of children a small amount of iodine or iodide prevents this form of goitre. This is of importance not only as regards simple goitre but it may reduce the incidence of adenomatous goitre and Graves disease years later. There is no question of the importance of this subject and the profession should take it up energetically as part of preventive medicine. It is in the power of everyone in general practice to materially aid in this matter. The giving of a small amount of iodine or iodide for two weeks twice a year is usually sufficient. The demonstration of Marine on a large scale of what can be done in a community is convincing proof.

(2) *Hyperthyroidism.* We all agree as to the difficulty of diagnosis in the milder forms of this condition. There are few more difficult problems and particularly in the diagnosis from early tuberculosis. What measures are of special help in this? If we would think of thyroid disease in every patient with functional nervous disturbance much would be gained. I should like to emphasize the value of a period of observation with the patient at absolute rest and careful records kept. Two procedures require special mention, (a) the epinephrin test of Goetsch and (b) the basal metabolism. The epinephrin test has been criticized, rather unfairly in my opinion, partly perhaps because too much has been expected of it. It shows an over-active sympathetic system, which does not necessarily mean hyperthyroidism

but frequently does. If one uses it as an aid and not a positive sign it will be found of great value. The basal metabolism determination should be regarded in much the same way. It is not a positive guide and there are many chances of error in its technique. Only in skilled hands should it be regarded as of value. The giving of thyroid extract is of some value if done with caution. The response is usually definite and a small dose is not likely to do harm. An unexplained recurring diarrhœa, loose stools early in the morning and after meals are suggestive.

(3) *Hypothyroidism.* This is a much more frequent occurrence, in my opinion, than over-activity of the gland. We have the picture of the fully developed disease so fixed in our minds that we miss the less clearly defined forms. Myxœdema in its marked manifestations is not common, but mild grades are constantly overlooked. I have an interesting demonstration nearly every year after showing a patient with mild or moderate hypothyroidism in my clinic. At least one student comes and tells me that some relation has symptoms such as the patient shows. On examination the relative usually proves to have some grade of under-activity of the thyroid. There is no doubt that it is a fairly common manifestation in advanced life. Some of the points which suggest its occurrence and are an aid in the diagnosis may be mentioned. Even the mild forms of hypothyroidism should offer no difficulty if the possibility is kept in mind.

(a) *Reaction to cold.* These patients feel cold much more than the average individual and it is often possible to get a definite account from the patient or more often from one of the family that she has required much warmer clothing or heavier covering in bed There is sometimes a distinct disinclination in winter to go out of doors more often than is necessary.

(b) *Skin.* There may have been a definite change in the amount of perspiration. The thickening of the skin may be suggestive both on inspection and palpation. In mild grades the skin changes may be more marked in some regions, particularly the forehead.

(c) *Hair and Nails.* Any change in the hair of the head is usually noticed, and a history of marked thinning is not uncommon. Special attention should be given to the eyebrows. Thinning of these, especially on the outer side, is often significant. The nails may show changes, becoming more brittle.

(d) *Psychical changes.* These may be slight but if enquiry is made, an account of slowness in the mental processes may be obtained. Occasionally the patient is conscious of this.

(e) *Constipation.* This is common in these patients and if the history shows that it came on suddenly about the time of onset of the other symptoms it has significance. It usually is not helped by ordinary doses of laxatives but responds very promptly to thyroid extract. This may confirm the diagnosis in a striking way.

(f) *Local fatty deposits.* These occur especially above the clavicles and about the ankles. Such are not peculiar to hypo-thyroidism but are always suggestive and may direct our attention to the diagnosis.

(g) Diffuse pains with unequal sluggish pupils, decreased reflexes and hypotonia may suggest tables dorsalis.

PITUITARY DISTURBANCES

The pituitary gland plays a great part in growth and development, influences certain rhythmical functions, has an important influence in metabolism, particularly carbohydrate, and also on the water function of the body. The classical disturbances relating to growth—secretory—and the neighborhood symptoms produced by tumors, are not considered here. I wish to discuss certain functional disturbances, especially as manifested by headache. We are all aware of the difficulty involved in many cases of headache before we can decide on the cause, without which knowledge our therapy is a makeshift affair. In some cases the responsibility of the pituitary gland is very clear.

The picture presented by these patients is often fairly definite. Those headaches are usually irregular in occurrence, except that in females they may come about the time of menstruation. The situation of the pain is usually in the temporal or supra-orbital regions but they may begin posteriorly and extend to the front of the head. Stooping over or lifting generally increases the pain. It is often found that these patients are very fond of sweets and have always eaten them freely. There is sometimes a history of an intense craving for sweets for a day or two before a headache. Some patients have learned to regard this as a warning and realize that if they can resist this craving the headache is likely to be less severe. There may be excessive thirst and a large amount of urine with the headache. Some patients complain of dizziness and disturbance of vision. The significance of pathological sleepiness has to be remembered and it may be an important clue.

Leaving out the cases in which there is anatomical change in the gland, what is the explanation in what may be termed the functional cases? In general the condition is to be regarded as due to hypofunction. The X-ray plate may show variable findings and in some of these patients the sella turcica appears smaller than normal. The explanation is that any increased call for function of the gland means hypertrophy and, therefore, pressure. The indication for treatment is to supply the extract of the gland and so reduce the need for hypertrophy. The dosage of the gland has to be decided for each patient. It is probably best to begin with small doses and increase gradually if this is indicated. It may not be necessary to give the gland continuously; if the headaches occur only at menstruation, the gland may be given for a week before. In some patients a reduction in the carbohydrate intake, if this has been excessive, has seemed to be of distinct help.

Water Metabolism. The influence of the extract of the posterior lobe of the pituitary on the excretion of water is a remarkable phenomenon. The work of Larson, Weir and Rountree[1] shows that the influence of pituitary extract in the prevention of diuresis is independent of the nerve supply to the kidney. The administration of the posterior lobe extract controls polyuria as is shown by the results in diabetes insipidus. The explanation is not clear and must be left for future work to give. It apparently is not due to the renal threshold for water being raised.

THYMUS GLAND

Lymphatism involves more than the changes in the thymus gland itself and may be described as a hyperplasia of the lymphoid tissues and thymus, hypoplasia of the cardio-vascular system and peculiarities of configuration. It is to the occurrence of this condition in adults that special attention is directed. In Symmers' series, 457 cases (of which only 92 were below the age of 20 years) were found in 5652 autopsies (8 per cent). The condition may be a recessive status lymphaticus, showing atrophic changes in the lymphoid apparatus, or status lymphaticus in which the thymus is hyperplastic. One important feature of the condition is the liability to sudden death in which necrosis in the lymphoid structures is common. Symmers regards this as in close relation to anaphylaxis. The possibility of sudden death has an important medico-legal bearing. (a) It may occur from anaphylaxis, necrosis in the lymphoid tissues having resulted in sensitization, and further necrosis resulting in death. (b) The arteries are hypo-plastic and hence rupture easily, so that a fatal cerebral hemorrhage may result from slight injury. (c) Sudden death in young children with status lymphaticus is very rarely due to pressure of the enlarged thymus.

In adults the condition is easily recognized. In males the points are (1) a slender body, somewhat of the feminine type, with rounded arms and thighs; (2) a soft delicate skin; (3) a scanty growth of hair on the face, especially on the upper lip and chin, and in the axillæ, with a feminine distribution of the pubic hair; (4) the genitals may be poorly developed, some are cryptorchids; (5) there may be an enlargement of the cervical and axillary glands. In females the features are (1) a slender thorax and extremities; (2) a soft delicate skin; (3) scanty axillary and pubic hair; (4) hypoplasia of the genital organs. In addition to the liability to sudden death the important points are: (1) increased susceptibility and decreased resistance to acute infections. It is wise to be very guarded in the prognosis of acute disease in these patients. (2) In females there is increased danger in childbirth. (3) Psychical changes. They are unstable and form an undue proportion of drug addicts and suicides.

It is evidently difficult to ascribe all these changes to the lymphoid tissues and it is reasonable to suppose that other glands are concerned.

(1) Trans. Assn. Amer. Phys., 1921, 36, 409.

But it is not easy to estimate to what extent. How much can be done by treatment of the condition if recognized early no one can say, but it would probably be of small benefit.

SUPRARENAL GLANDS

Of these glands and the results of disordered function we really know very little. Addison's disease and the results of certain new growths of the glands are well recognized and need not be discussed. There seems to be a particular tendency to theorize as to suprarenal disturbances and our Gallic brethren have perhaps led the way in this. Much of the literature on this subject seems very fanciful. Much uncertainty is concerned with what is termed *adrenal insufficiency*. How much definite information have we regarding this and how far can we use it in our daily work? Doubtless many of us have an idea that we can recognize some cases of functional disturbance and of particular interest is the possible significance of *low blood pressure* in this condition. Low blood pressure has many causes and it may be granted that one of them is lack of adrenal secretion. The recognition is rarely positive and in some instances we are tempted to rely on the therapeutic test—often a very fallacious proceeding. The skin reactions are sometimes of value, the vaso-motor constrictor response known as the "white line," specially described by Sargeant, being most important. While suggestive, it is not by any means a definite guide. With a low blood pressure and asthenia it should always be given attention. The therapeutic test does at times seem strongly confirmative of the diagnosis. The administration of adrenal gland extract may result in prompt improvement in the symptoms and an increase in blood pressure. In this connection much interest attaches to the question as to whether it is effectual if given by mouth. It may be self deception—and this is easy in this subject—but my view is that we may have excellent therapeutic results from the administration by mouth.

OVARIES

Disturbance of their internal secretion is frequent and of especial interest is the effect of this on other glands. We have ample speculation on this, much of which seems visionary. Of one disturbance we have much to learn, namely, the menopause. It may be pointed out that in not a few instances the stopping of the periods and the cessation of the internal secretion, so far as can be judged by symptoms, do not coincide. This point seems worthy of emphasis, as, if it is not recognized, the opportunity for useful therapy is lost. The two events may be months or even years apart. We sometimes see this demonstrated very clearly in cases of surgical removal of the uterus, the ovaries being left. Such a case was seen recently.

REPORT OF CASE

A single woman, aged 50, had the uterus removed two years before for fibroids, the ovaries being left. She recovered rapidly and had no disturbance of any kind.

She gradually gained twenty pounds in weight after the operation. She came complaining of a great variety of symptoms, weakness and nervous disturbance being the most striking. She had felt the cold severely during the past winter, there had been marked numbness of the hands and arms, and a certain amount of "flushing." The fatigue attendant on slight physical or mental exertion was very marked. Six weeks of a "rest cure" had made her definitely worse. The examination showed a slightly enlarged thyroid, she had a pasty look with rather thick skin, there was no change in the growth of hair, the blood pressure was 106 systolic and 60 diastolic, and the reflexes were much increased.

This case might be interpreted in different ways and undoubtedly represented polyglandular disturbance. Which gland was primarily disturbed? My view was that the ovary might reasonably be suspected of having the greatest responsibility and therefore, she was given ovarian therapy. The result was prompt and satisfactory. The symptoms rapidly decreased, the fatigue lessened, the blood pressure rose to 120 systolic and 85 diastolic, and when last seen she regarded herself as well. It is perfectly possible that thyroid extract or a mixture of several glands might have brought about the same result. Here there was no symptom specially suggestive of the menopause save perhaps the vascular disturbance.

POLYGLANDULAR DISTURBANCES

Here is a subject on which it is difficult to know what to say. There has been much written on varying influences of one gland on another and all varieties of combinations have been described, sometimes illustrated by diagrams which look very plausible but really explain little. It may be that with every case of disturbance of one gland we have a polyglandular syndrome. In some cases we can be sure of disturbance of two or more glands. In general my feeling is that we should go very slowly in assuming polyglandular syndromes to be present. Naturally this question is one difficult of proof. An anatomical change in a gland may be positively proved but functional disturbance is another matter. As a practical problem it seems wiser to make the effort to decide which gland is primarily at fault and to keep a very straight line between this and suppositions as to what changes there may be in other glands.

TREATMENT

Naturally in a general discussion with limited time this cannot be discussed at any length. A few points may be noted. In the case of hypothyroidism a relatively small dose of thyroid extract or thyroxin is often sufficient but it is well to realize that the proper dose is that which produces the desired effect. Each patient should be studied with this in view. We are too apt to keep to our usual doses in therapy generally and if results do not follow, feel that the remedy is not indicated or not efficient when in reality our dosage is to blame This needs to be kept in mind especially in giving suprarenal gland extract. For this to be efficient comparatively large doses may be required.

In the treatment of hyperthyroidism and Graves disease the value of X-ray treatment is an important point to decide. Undoubtedly the rœntgenologists have claimed too much, but of its value in some cases there is no question. My own impression is that its value is greater in the adenomatous toxic goitre than in Graves disease. Some surgeons feel that X-ray administration adds greatly to the difficulty of subsequent operations if this should be necessary. Earlier employment of X-ray treatment—if it is to be used—should be our aim.

One question which we have all tried to answer is that concerned with polyglandular mixtures. When should they be given and what are the indications? No inclusive answer can be given. In general most of us agree that simplicity in treatment is an advantage and that polypharmacy should be avoided. In the study of cases of internal secretion disturbance it is important whenever possible to use one gland extract at a time to decide what results follow. But in some cases indications for the use of two gland extracts seem equally clear and there can be no reason why they should not be given. There are some patients who do well on mixtures of several gland extracts. Frankly, I am sure some of us are ready to confess that we are in doubt in these cases whether all were responsible or some particular one alone. It is in deciding such questions that the value of careful accurate clinical observation is evident. In general it is best to give the gland substances in as simple a way as possible. We are then better able to study our results intelligently and profit by them.

SUMMARY

What are the practical points that we should keep in mind regarding this subject? Two seem to me of particular importance. The first is the question of prevention which evidently should always be in mind. The way to accomplish this in simple goitre is clearly shown and it is our duty to carry this out as thoroughly as possible. Why should not your Society do this as a State-wide demonstration of preventive medicine? I do not know how prevalent goitre is in North Carolina but no doubt there are special districts in which it is common. In any case it would be a most interesting piece of work for a county society.

The second point is the importance of early recognition of disturbance and following this the effort to prevent its advance. In hypothyroidism this is not a very difficult matter and the results are evident. One other group of cases may be mentioned, those with disturbance of the pituitary gland. It is difficult to say how much could be done by early treatment because the cases are usually not recognized until the process is well advanced. But at all events it is well worth a trial. We should always be on the alert to recognize disturbances as early as possible.

Dr. Royster, President: The address in surgery, ladies and gentlemen, will be given by a colleague from a sister State, a sound and sensible surgeon, a clear and honest thinker, Dr. LeGrand Guerry, of Columbia, South Carolina.

SURGERY OF THE THYROID AS INFLUENCED BY OUR NEWER KNOWLEDGE

LeGrand Guerry, M. D., Columbia, S. C.

The study of the thyroid gland is a theme of extreme fascination and interest. It was Osler, I believe, who said that one could study lues, its complications and sequelæ, and be a good doctor. I am wondering if the same statement may not be equally true when applied to the thyroid gland. Certainly there is not an organ or tissue in the body immune from the effects of thyroxin; the activating principal.

For the purpose of keeping consecutively before your minds the whole picture I remind you that embryologically, the thyroid gland develops from the pharyngeal hypoblast, being the median and lateral inversions. It is an extremely vascular ductless gland, situated at the front and side of the neck and only a short distance above the sternum. The gland consists of two lobes, a right and left lobe respectively, connected by an isthmus; the lobe being on each side of the larynx and very closely associated with it: the isthmus connecting right and left lobe, hence its name.

The gland usually weighs about one ounce; is extremely vascular, and it is not only interesting but important to know, that it has about 1/6 as much blood as goes to the entire brain and this from the same source. Evidently nature entertains the highest regard for this ductless gland or she would not so protect it.

The older clinicians before the era of modern chemistry, gave wonderful descriptions of the clinical manifestations of hyperthyroidism. Accordingly we find as early as 1786 that Parry described this disease very clearly; nearly one and one quarter centuries ago this was.

In 1800 Flajani, an Italian physician, also wrote a clear description of this malady. The picture he gave was not as vivid as that of Parry but evidently it must have been the same disease that he was talking about. In 1835 Graves gave his classical description and published it in book form eight years later. This description of Graves was so wonderfully accurate that the English speaking people gave to the disease his name.

In 1840 Von Basdow also described the symptom complex. This article of Basdow's was followed by innumerable descriptions. Charcot in 1856: Von Graffe in 1864: Stellwag in 1865.

You will recognize at once that many of the signs, Von Graffe's signs for instance, bear the name of the one who discovered the sign.

In 1886, however, Moebus experimentally proved that Graves disease was due to an overdose of the thyroid gland secretion gaining access to the circulation.

The work of Moebus really anticipated the investigations of more recent physiological chemists.

Jaffory described the areas of pigmentation around the eyes and other parts of the body, and Dalrymple described the contraction of the upper eyelid.

I have brought to your notice a number of these clinical descriptions, which represents one great phase of clinical medicine, in order to bring into sharper contrast, and at the same time greater harmony, the fuller understanding that has been gained through recent chemical studies of thyroid function.

The older doctors were wonderful clinicians, students, and observers. They greatly excelled us in this phase of work. We need today to take a backward step, so to speak, and cultivate our powers of observation vastly more than we do.

There should be and there is a mid ground between the laboratory and the clinician.

What then is hyperthyroidism, so far as our newer knowledge is concerned?

In the Journal of Biological Chemistry for August, 1919, Kendall announces that he had isolated and identified thyroxin, which is the hormone or active principal of the thyroid gland. This active principal has been described as a "catalyst that accelerates the rate of formation of the quantum of potential energy in the cells of the organism. The disease then that we speak of as hyperthyroidism, is the clinical syndrome caused by an excess of thyroxin being present in the body. We know definitely that this active principal or hormone, will increase greatly the metabolic rate at which we live."

Kendall has this to say in the article above referred to: "The clinician is able, by an analysis extending over thousands of cases and many years observation, to establish certain fundamental aspects of thyroid activity which find their proof in definite clinical syndromes. The pathologist can relate conditions of the gland showing various stages of activity and inactivity to certain clinical manifestations. The physiologist is able to assign, within broad limits, the function of the thyroid, but no ultimate proof or quantitative conception could be evolved until the thyroid hormone was separated as a chemical entity and its chemical identification made certain. With the structural formula of the hormone established, its mode of action may be directly attacked and the final proof of the function of the thyroid becomes a possibility. The circle may be completed and thyroid activity measured, not by the clinical results of its action alone, but also by definite chemical substances which will be shown to be the end products of its activity."

There is one specific and unique physiologic action of thyroxin which is not associated with any other single substance within or without animal organism. This essential fact has been established. Without changing any other factor, the rate of basal metabolism is determined by the amount of thyroxin administered.

We are gaining light and knowledge as the chemist pushes his investigation of the thyroid gland. The common error of including all disturbances of the thyroid under the general expression, goitre, is fast becoming untenable.

In this respect it is becoming important to differentiate pure hyperthyroidism from adenomatous goitre, since they are often looked on as essentially identical in character. Plummer has pointed out that a definite symptom of hyperthyroidism is, with rare exceptions, associated with diffuse hypertrophic or adenomatous goitre, just as it follows the therapeutic administration of thyroxin. Whereas hypertrophic goitre is the anatomic expression of functional disturbance in the developed thyroid, an adenoma of the gland represents new tissue developing post-natally from the stimulation of embryonic cells. In either case, and the two types of goitre may be present in the same structure, the effects noted are essentially those attributable to an excess of the normal thyroid hormone. Recognition of this, in which the heightened basal metabolism assists, points the way to rational treatment, by removal of the adenoma.

Pathologically speaking, the distinquishing thing in the cases of pure hyperthyroidism, is that we find a great hyperactivity in the essential alveolar structure of the gland itself.

The true gland cells are driven at a high rate of speed which causes the manufacture of thyroxin greatly in excess of the needs of the body. It is this excessive amount of the hormones acting on the individual cells throughout the body, increasing the rate of speed at which we live, that we mean when we speak of the basal metabolic rate being increased. In the colloid and adenomatous goitres, we may have areas of a gland that are truly overactive, but we have in addition, an excess of colloid material in the one instance and adenomatous growth in the other.

It is clear from what has been said that many of the thyroid functions are carried on through the agency of certain active principals secreted by it. Kendall's work mentioned above, leaves no room for doubt that iodine is certainly one of the materials used in the manufacture of the only active principal that we know anything about, namely, thyroxin.

Thyroxin is, in all probability, stored in the colloid material found in the gland acini. As it is needed for the body it is absorbed by the passing blood.

In hyperthyroidism the normal balance has been disturbed, the gland manufacturing thereby and blood absorbing more of the active principal than normal.

Just why at times, there should be an increasing demand for thyroxin we do not know. It is probable that the demand for the active principal of the gland may be due to certain waste products flooding the system. For example, from various foci of infection or from direct ingestion of polluted water.

On the other hand the lack of iodine necessary for the manufacture of the active principal may be responsible in some cases.

When iodine is lacking the gland seeks to overcome this deficiency by a compensatory enlargement.

It is likely then that in the beginning many hyperthyroids are in reality hypothyroids becoming hyperthyroids when the gland over-

compensates in response to the very urgent, insistent, and constant demands made upon it by the system for iodine and its activating hormone, thyroxin. This cannot be true however, in all cases, for there is good evidence to show that there are cases of primary hyperthyroidism which are not explained by the above stated ideas as to causation.

We know it to be true as a matter of clinical experience in the enlarged thyroids of adolescence, with true symptoms of Graves, that feeding such cases iodine will very frequently cause immediate recession of symptoms; the explanation being that the gland hypertrophies in order to meet the unusual demand for iodine at this period of life. Supplying sufficient iodine by mouth, the thyroid promptly returns to normal size and symptoms abate.

This brings us then to the question of treatment which we will discuss very briefly under two heads; it seems to me that what has already been said furnishes a rational basis for treatment.

In the first place then we believe that medical management of these cases has, especially in the very early stages, a definite place—

Rest in bed.
Absolute quiet.
Freedom from worry.
Careful diet and hygiene.
Removal of all foci of infection.

These mild cases have been the occasion of great confusion, because in estimating the results of surgical treatment they have been included in the statistics, when as a matter of fact they should not be so included. These abortive types of Graves' disease, formes frustes, with very mild symptoms are really not surgical cases at all. This in the group for which a great deal can be done by judicious and scientifically planned medical treatment, in a word, they constitute the medical types of goitre.

We use the expression, medical types of goitre, with much trepidation because it is such a fruitful source of misunderstanding. These cases are of the same essential nature as the well established Graves' disease, but they are wide apart in the point of severity of symptoms and differ so greatly as regards mortality, prognosis, and treatment, as to necessitate their consideration under a separate head.

The point that I wish to stress about the thyroid cases, with all of the emphasis and conviction at my command, is this: the medical measures in the early cases should be given a fair and reasonable trial. We direct especial attention to the expression, reasonable trial, by which we mean a trial within reason; such a trial as would satisfy a reasonable man.

If the case does not respond promptly, a surgical consultation is the irreducible minimum in behalf of the patient. It is not in the interest of the patient's welfare to persist in measures which are barren of results on the positive side and equally certain on the other hand to lead to grave complications and sequelæ which mean failure

in the end, no matter what is done. The policy of doing nothing and expecting something to happen, has very little place here.

When the grave secondary changes occur, and they surely will as a result of the toxemia, the blame rests on the one who is responsible for the delay. A degenerated and dilated heart muscle; an undermined nervous system; secondary nephritis, etc.; is a direct criticism of medical management and brings reproach to surgery.

We are in the midst now of the claims of the rœntgenologists: just what to say about it as a curative agent in any real sense, I do not know. Frankly, my experience leads me to be skeptical. All of us know of the extravagent claims made for deep rœntgen-ray therapy in deep seated cancer. Certainly the rays and radium produce a dramatic temporary effect, but within the limits of my experience, at least, it has been only temporary. I know of eight cases of recurrent cancer; four in cancer of the breast; two in cancer of the jaw; one in cancer of the liver; one in cancer of the neck; that have died within the last year and every one had had everything that X-rays and radium could offer.

We have not as yet, so far as I know, been able to regulate the dosage. We are hopeful of the X-rays, but our position at present is one of watchful waiting.

For the sake of argument, we admit that it is helpful in the medical management of the early cases.

A word in conclusion about surgery: History repeats itself; so likewise does medical and surgical history.

In the early stages of thyroid surgery practically all of the cases were coming late to operation. Late operation made a high mortality and high mortality made a late operation; a surgical vicious circle. This state of affairs has been completely changed.

Surgery, in conjunction with the advice and council of a real internist, offers a primary mortality of between 5% and 2%; 85% complete symptomatic cures; about 7% receive great benefit, and a very small number apparently are not helped.

To recapitulate, we advocate a reasonable medical management; we recognize the value and use of radium and X-rays in their place; but we insist that a surgical method that offers a mortality of 5%, that will practically cure 90%, is a method that cannot be lightly set aside. By the plainest rules of evidence, the rœntgenologists must establish their claim by showing a lower mortality rate and establishing a greater percentage of symptomatic cures. This is the acid test.

The great problem is to preserve a proper balance between what medicine can do on the one hand and what surgery can do on the other.

This is a disease essentially for team-work and nothing is so helpful to the surgeon as the constant council and advice of an able clinician.

That master surgeon, Kocher, has said, it was not necessary for the medical man to act surgically, but it was necessary for him to think surgically. To this we have been pleased to add, that it is not necessary for the surgeon to act medically, but it is necessary for him to think medically.

Dr. Royster, President: The third speaker of the evening, who will talk upon organized medicine, is a former president of the American Medical Association, sometime professor in Rush Medical College, in affiliation with the University of Chicago, and now the Resident Trustee of the American Medical Association, and one of the sanest medical men this country has ever produced, Dr. Frank Billings, of Chicago.

Dr. Frank Billings, Chicago: Mr. President, members of the North Carolina Medical Society, Ladies and Gentlemen:

After a strenuous day characterized by an enormous amount of mental pabulum, I doubt if you will care to hear much from me. I will attempt to be brief.

I am fortunate to occupy the position on the Board of Trustees of the American Medical Association because among other things it has given me the opportunity to take part in the meeting of your society. I appreciate this honor. I have been more than repaid for the long journey from Chicago and I cannot find words to express my appreciation for the many good things which I have heard during the meeting, including the address of your president. This address characterized efficient medical practice as necessarily embraced by brain, culture and character; from my experience here, I am sure that he found the inspiration for his address in the profession of North Carolina.

I propose to speak to you about the past, present and future of the American Medical Association.

The early history of medicine in the United States gives evidence of the fact that a large number of the practitioners of that day were splendidly qualified because they received their medical education and training in the best schools of Europe. For the past fifty years of our history, these men practiced and taught medicine in the United States in a manner which made a comparison between medicine in the old and new world complimentary in character to these early practitioners.

With the rapid increase in population in the country, the standard of medical education and practice declined in quality. Consequently we find that the leaders in the profession saw the need of an improvement in the standard of medical education and took appropriate action. This resulted in the organization of the American Medical Association in 1847. This year is the seventy-fifth, therefore, or the Diamond Jubilee of the Association.

Primarily and fundamentally the American Medical Association was organized to improve standards of medical education in the country. For the first fifty-five years it justified its existence upon the influence it exerted in the elevation of the standards of medical education and practice, but this influence was necessarily minimized by the rapid increase in territorial possessions and the migration of the people to pioneer sections of the country. To meet the need of the people for medical care, there developed many medical schools

all over the country, many of which were organized as private institutions by groups of professional men. Many of these institutions were poor from an educational point of view, but they filled an existing want or need and those who were responsible for their existence were real benefactors. As the country became more settled and the people better educated, these schools or many of them, no longer filled the need; or, did not efficiently meet the need of the day. Too many inadequately trained men and women were graduated and assumed responsibility for the life and health of the community for which their training was inadequate. This condition became so acute that the leading members of the Association saw the need of a better control of medical education in the country and this led to a consideration of reorganization of the Association. For this purpose a committee was appointed in 1900 and at the meeting of the Association in 1901 at St. Paul, Minn., the committee made a report which included an entire reorganization of the Association along democratic lines. This report was unanimously adopted. The new organization recognized the county society as the unit and the portal of entry into membership. This recognition of the county as the component society was and is intended to safeguard the character of the membership of the Association inasmuch as each member is admitted to the Association through the county society by the members of the profession who are his immediate associates and who know him as a man and as a doctor.

With this reorganization of the Association, there came a new interest in the promotion of better standards of medical education. Fortunately, at this same period there occurred new discoveries in the field of preventive medicine which aroused the interest of philantropic individuals and foundations and of industrial corporations and encouraged them to promote scientific research and the welfare of the public. In this connection it is interesting to note that Dr. W. W. Keen, when president of the Association in 1900, investigated and found that the total endowment for medical education and research in the United States at that time, was approximately one million dollars. It is noteworthy, too, that since that date the interest of the general public in the promotion of health has been so great that the amount of capital now devoted to the endowment of medical education, scientific research and public welfare in the United States amounts to more than one hundred million dollars.

With reorganization the improvement in the standards of medical education remained the chief slogan of the Association. In 1904 the committee on medical education was enabled to do some effective work through an appropriation from the treasury. In 1905 this committee became the Council on Medical Education and under the leadership of Dr. Arthur Dean Bevans as its chairman and its very efficient secretary, Dr. N. P. Colwell, the standards of medical education have been made the equal in practice in the United States of any country in the world. The Council has been able to do this because it adopted the policy of co-operation with other organizations

in the work, viz.: the Federation of State Licensing Boards, the Association of American Medical Colleges and other public and private organizations. I need not go into details of the work of the Council on Medical Education because its accomplishments are known. Suffice it to say that the number of medical colleges in the United States in 1905 was approximately 165, and that today the number is about one-half.

The other activities of the Association were carried out by committees on the defense of research, public health promotion, medical legislation and medico-legal activities. In 1910 a Council on Public Health and Instruction was organized which took over all of these activities with the exception of judicial-legal matters, the latter placed under the jurisdiction of the Judicial Council.

The Council on Health and Public Instruction has co-operated with medico-social and lay organizations in the promotion of the advancement of medical science through research and animal experimentation, public health, medical legislation and the like. The Council has done excellent work, but unfortunately has had too much to do and has, therefore, been unable to concentrate effectively upon any one of its many projects and to guide it to a successful conclusion. This has led to a proposal long in the minds of the members who have given the subject thought that the legislative function and some of the other duties of the Council should be placed in a bureau at the headquarters of the Association and that the public health activities of the Council on Health and Public Instruction should be its main function; that the Association should publish a lay medical journal under the auspices of the Council, the purposes of which shall be the education of the public in the matter of present day knowledge of medicine and the benefit which it will afford the public if properly applied and accepted.

For many years the public of the United States was preyed upon by quacks and manufacturers of patent medicines, chiefly nostrums. In 1905 the Association organized the Council on Pharmacy and Chemistry which was placed under the jurisdiction of the Board of Trustees. This council has had in its membership some of the best pharmacologists, chemists and clinicians in the country and through the laboratory established at its headquarters, has analyzed thousands of patent medicines and other nostrums and preparations made by proprietary pharmaceutical houses. Through the Propaganda Department of the Association, the work of the Council on Pharmacy and Chemistry and the results thereof, have been made known to the members of the medical profession and to a large part of the public with a benefit far beyond anything that one can estimate.

Special committees appointed by the Scientific Assembly of the Association have worked upon various problems relating to the practice of medicine and while one may not point out decisive results, much good has been accomplished.

In 1883 the Association began the publication of *The Journal*. During the first fifteen years, the editor was a part time employee, usually a practitioner whose chief time was devoted to his own affairs. *The Journal* was small in size and its chief contents were made up of transactions of the Association. In 1898 the trustees were fortunate in securing the services of Dr. George H. Simmons as the full-time editor-in-chief. At that time the membership of the Association was approximately 8000. Dr. Simmons served as editor and general secretary of the Association and later as its general manager. Under his management chiefly, but coincidently with the good work of the various councils, is due the phenomenal evolution of scientific medicine of today. *The Journal* of the Association grew rapidly as evidenced by increase in its size and in its development from a monthly into a weekly issue. At the present time it has a circulation of approximately 89,000 numbers each week; the largest circulation of any medical journal in the world and acknowledged everywhere as the best medical publication of the universe.

To make the operations of the Association practical it now has its legislative body,—its House of Delegates, which is presided over by the speaker elected from its membership. Its function is legislative in the full acceptance of the word and, therefore, it formulates the policies which the Association will pursue in its activities and authorizes committees, councils to carry on approved work. The Scientific Assembly, which is made up of fifteen professional sections, is comprised of fellows of the Association. A fellow of the Association is a member who applies for fellowship on a proper form and who pays the annual dues of the Association and subscribes for its journal. There are now approximately 53,000 fellows. A member of the Association is a member of the medical profession who is a member of a county component society and who remains such as long as he pays his annual dues to the county society; this fact makes him automatically a member of the State constituent society and of the American Medical Association. The present membership and fellowship of the American Medical Association is approximately 89,000.

The Board of Trustees of the American Medical Association is elected by the House of Delegates. Under the present Constitution and By-Laws, the Board of Trustees has the jurisdiction and power of a board of directors of any corporation under the laws of Illinois, the state in which the American Association is chartered. At the present time, therefore, the Board of Trustees is responsible for the financial and other business affairs of the Association, including the selection of the editor, the general manager and under the latter the business personnel at headquarters. During the interval between the annual meetings of the Association, the Board of Trustees may act upon important matters relating to the business and professional activities of the Association, asking for the approval of the House of Delegates of its report at the annual session of the Association.

The president of the American Medical Association under its present operations is elected by the House of Delegates as the presiding

officer of all of the activities of the Scientific Council. The president is now relieved of the difficult and often to him unpleasant task of presiding over the House of Delegates, but he is invited and expected to attend the sessions of the House of Delegates and to address it at the opening session and to participate in the discussions of important questions which come before it.

The Association now publishes five special journals devoted respectively to Internal Medicine, Diseases of Children, Nervous and Mental Diseases, Dermatology and Syphilology and to Special surgery. These special journals have been published upon the request of the members of the profession who practice and are interested in the special subjects; they are recognized as of the highest class, fill a long standing need and although they do not afford a profit to the Association, they are all self-supporting and above everything else are of enormous benefit to the profession and to the public.

In 1916 the Association began the publication of the *Quarterly Cumulative Index of Medical Literature.* It has become very popular with medical writers because of its arrangement of medical titles, authors and other data is far more practical than that of any other like publication. It is issued at a less cost than any other like publication.

The chief source of income of the Association is *The Journal.* This income of *The Journal* is earned chiefly through the selected advertisements which appear in it. The financial income chiefly earned as stated through the publication of *The Journal*, has enabled the Association to accomplish the many great things during the last twenty years. This leads me to the next point; that is, the administration headquarters in Chicago. For twenty years the Association has owned a building utilized as headquarters. On two previous occasions new buildings have been erected. No one possessed the vision at those periods to appreciate the growth and needs of building space of the Association and in consequence at no time has the Association enjoyed sufficient printing press room and other quarters for its administrative work. The House of Delegates has authorized the completion of new buildings at headquarters, which are now under way and early in 1923 the Association will have a completed building 100 by 160 feet ground dimensions of six stories, fireproof construction. This will enable the Association to carry on its present work and to amplify its publications and other business including the administration of policies looking to the benefit of its members in an efficient way for many years to come. This includes among other things, the employment of a larger personnel among whom will be the director of a bureau on legislation and medico-legal matters, a field secretary who with his personnel, will visit with state organizations at their annual meetings, aid council officers and do many other things which will bring benefit to the members of the Association.

In the fall of 1920 and again in November, 1921, there was a meeting at the Association headquarters of the secretaries of the state

constituent societies, the officers and members of the Board of Trustees and the members of the councils. These meetings were held for the purpose of the discussion of the many problems which confront the medical profession and the public in regard to the practice of medicine, public health activities, medical education and other subjects. In both of these conferences it was recognized that a program must be adopted by the American Medical Association, the constituent state societies and the component county societies which by co-operative and co-ordinated effort will result in the professional advancement of the lowliest member of the profession for the benefit of the public.

In closing permit me to thank you for your attention and kind consideration of what I have had to say. I know you are tired because you have had a strenuous day. The manifest interest which you have exhibited proves that a visit from a member of the Board of Trustees affords encouragement to you and favors the promotion of a better understanding between you and the officers and Board of Trustees of the American Medical Association. Other officers and members of the Board of Trustees have expressed a desire to visit with and talk to the members of other State constituent associations and I am sure that a policy of this kind will be mutually helpful.

Finally, may I say that the chief problem which organized medicine must consider and attempt to solve is the preservation and assistance of the general practitioner,—the family physician, the most useful member of our profession. Today he is the most needed in the promotion of the welfare of the public. Organized medicine must aid in his professional advancement by affording him better facilities for the practice of medicine and for his own post-graduate instruction.

Dr. H. A. Royster, Raleigh: The session, I am sure, appreciates the addresses they have heard, and without objection, the Chair will take it upon itself to return thanks of the whole Society with its five hundred and fifty in attendance already tonight, the largest meeting by practically one hundred that we have ever had.

I wish to say, also, that the Chair returns its personal thanks for the unfailing courtesy, the splendid attendance, and the great interest manifested in this and all other sessions of this great meeting.

The Session now stands adjourned.

Thursday, April 27, 12:00 M.

Convention Hall, Robt. E. Lee Hotel

President Royster in the Chair

A telegram from President Seale Harris of the Southern Medical Association, requesting endorsement of the Gorgas Memorial in Alabama and Panama, was read, and Dr. Cyrus Thompson moved that the general session endorse these memorials to General Gorgas. The motion was unanimously carried.

After interesting remarks, Dr. Cyrus Thompson offered the following resolution: "Resolved that we most heartily endorse the 'Live at Home' campaign of Governor Morrison and assure him that the medical profession of the State appreciates the splendid work he is doing along this particular line and desires to offer its hearty co-operation." The resolution was unanimously adopted.

Dr. T. E. Anderson moved that the Society express appreciation for the kind and generous hospitality extended the Society by the hotel authorities, the medical profession and the people of Winston-Salem. Dr. Anderson expressed the thought that this had been a most pleasant meeting with no untoward happenings to mar it. The motion was unanimously carried.

The Secretary reported the action of the House of Delegates in the election of officers and committees and the same was unanimously approved.

President Royster, after some appropriate remarks, appointed Drs. M. H. Fletcher and C. M. Van Poole to escort the President-elect to the chair. On assuming the chair, the President, Dr. John W. Long, made the following remarks:

If you have any faith in me, believe me when I say that I did not want to be President of the North Carolina Medical Society. I had no ambitions whatever to hold the office. I was just as happy as a low private in the rear ranks as I expect to be as the official head of the profession in North Carolina. That may sound strange and some of you may not believe it, but it is true nevertheless.

At the same time I recognize the fact that election to the Presidency of this Society is the greatest honor that can come to any physician at the hands of his fellows. And no man in his right senses could fail to appreciate deeply such an expression of confidence from an organization such as the North Carolina Medical Society.

I have received similar honors from other scientific bodies which, measured by certain standards might be considered more famous than any State Society; but nothing has ever come to me that touches me more deeply than this action upon your part. You, who are my neighbors, who know my many faults as well as my few virtues, some of you since the ink was still wet upon my first diploma, and all of you know of my activities in our common fight for organized medicine and to keep untarnished the fair name of our profession.

In electing me as your President you have done for me the most that you could possibly do and I would be less than a man not to respond to your magnanimous action with the very best service of which I am capable. Indeed it is the realization of your confidence and esteem, as well as the enlarged opportunity to serve my profession, that determines me to accept the onerous duties that go with the exalted position of President of the North Carolina State Medical Society.

Many of you will recall that in 1917 I delivered before this body an illustrated address on the Early History of the North Carolina

Medical Society. In that lecture I reviewed the developments of the Society from its inception; in fact, I unearthed the history of a former State Medical Society organized in 1799, fifty years before our present organization. By the way, I am pleased to see that since that lecture in 1917, the Transactions of our Society has carried a synopsis of that earlier Society in the front of each volume. In my studies I especially emphasized the part our presidents played in the great drama of the history of organized medicine. I knew some of them personally, since quite a few of them were spared until after I entered the medical arena in 1883, therefore, I speak, in part at least, from first hand knowledge.

Now, when I review that long line of intellectual giants and meditate upon the things they did and stood for I feel like exclaiming with Elijah when he sat down under the juniper tree: "Oh, Lord, take away my life for I am not better than my fathers."

Therefore, my brethren, you see I shall need and earnestly pray for your most loyal support, that together we may make the next twelve months the record year in our history. If the mantle of our fathers might fall on my feeble shoulders for this one year! If I may have the blessing of our ex-presidents who are still with us in the flesh, including the last one, who is one of my own professional sons, I shall go forward with every confidence of success! And let me assure you, that having put my hand to the plow, I shall not turn back. And I herewith pledge to you who have so signally honored me the very best that is within me.

Listen, some of us may have entertained different views as to policies, interests, personal opinions and estimates of one another's personal equation even, but in the interest of our dear old Medical Society could we not forget all this for the time being and, putting our shoulders to the wheel, pull together for the good of the profession as a whole? I declare to you that I come into this responsible position with malice toward no one but an earnest desire to serve every one alike, in the true spirit of democracy!

What possibilities lie before us! Look at this body of men. Many of them, their heads tinged with gray, their countenances stamped with the wisdom of experience and godliness. But the vast majority of them are stalwart men in the heyday of their strength and young manhood. My observations, both at home and abroad, have been quite cosmopolitan, and I say with all sincerity that I never saw a more intellectual looking body of professional men than the personnel of the North Carolina Medical Society. Brethren, what you have already accomplished is only an omen of what you can do. Think for a moment as an illustration of what possibilities are inherent in a workman's compensation—rehabilitation law, or the establishment of a graduate school of medicine with all that goes with it.

Perhaps you think I have spoken a rather long while, and I have. Let me tell you one little story and I am done. I happened to be present when Abram Jacobi was made President of the American Medical Association. Jacobi was 82 years old at that time. He delivered a characteristically able speech. At its close he apologized for its length by saying, "Remember, gentleman, you waited a long time to ask me to make this speech!"

No further business appearing, the Society adjourned *sine die*.

MEMORIAL EXERCISES

TUESDAY, APRIL 25, 8:00 P. M.

REPORT OF OBITUARY COMMITTEE

We, your Obituary Committee, beg leave to offer the following report:

In looking over the records of the past, we find that in 1919, when war claimed seven of our confreres, and when pestilence—influenza—caused the death of seventeen—and all other causes nineteen; totalling forty-three—that year had the largest death list up to date.

This year we are pained when we offer a total list of fifty who have passed to the Great Beyond, as follows:

DECEASED MEMBERS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

NAME	ADDRESS	DATE OF DEATH
Ashby, T. B.	Mt. Airy	April 9, 1922
Baird, John, Sr.	Mars Hill	Aug. 16, 1921
Barefoot, J. J.	Graham	
Battle, K. P.	Raleigh	March 23, 1922
Bolton, Mahlon	Rich Square	Aug. 25, 1921
Brooks, J. E.	Blowing Rock	May 19, 1921
Caldwell, Daniel Greenlee	Concord	Mary 13, 1921
Clark, Geo. L.	Clarkton	Jan. 24, 1922
Dew, Sam'l B.	Bailey	
Dickson, Albert P.	Raeford	
Eason, Oscar	Goldsboro	June 29, 1921
Frisbee, T. J.	Spring Creek	
Goodman, E. G.	Lanvale	April 28, 1921
Hatch, P. R.	Youngsville	Aug. 6, 1921
Herron, A. M.	Charlotte	
Hill, Lauriston Hardin (Hon.)	Germanton	May 13, 1921
Hyatt, Henry	Kinston	Feb. 24, 1922
Jones, Alex F.	Ararat	
Jones, Walter J.	Seven Springs	
King, Edward	Statesville	April 10, 1922
Lucas, W. H. G.	White Oak	
McAllister, Wm.	Middleburg	
McMillan, J. Luther	Red Springs	Nov. 8, 1921
Mann, E. D.	Saxapahaw	Nov. 20, 1921
Monk, H. G.	Trenton	July, 1921
Olive, W. W.	Durham	
Ramseur, G. A.	China Grove	
Robinson, Newton	Elizabethtown	Dec. 19, 1921
Sanderford, J. F.	Creedmoor	Nov. 12, 1921
Simpson, Wm. P.	Louisburg	April 28, 1921

Sorrell, L. P.	Raleigh	
Staton, Lycurgus L.	Tarboro	July 1, 1922
Strickland, W. J.	Moncure	July 12, 1921
Taylor, Isaac M.	Morganton	Nov. 26, 1921
Teague, Rufus J.	Roxboro	
Underhill, Henry Plato	Wendell	Nov. 18, 1921
Warlick, E. S.	Morganton	July 4, 1921
Welch, J. E. T.	Bushnell	April 12, 1921
Wilson, Frank G.	Gastonia	Nov. 13, 1921
Wooten, Richard W.	Kinston	May 20, 1921

DECEASED PHYSICIANS WHO WERE NOT MEMBERS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

NAME	ADDRESS	DATE OF DEATH
Cocke, G. W.	Mooresville	
Davis, R. M.	Bryson City	July 7, 1921
Eames, Richard	Mocksville	July 20, 1921
Elliott, John B. Sr.	Highlands	June 27, 1921
Ferguson, K. M.	Cameron (Indianapolis)	April 24, 1921
Hawkins, Alex Boyd	Raleigh	April 4, 1921
Moore, F. T.	Benson	
Parks, M. W.	LaGrange	May 31, 1921
Satterwaite, S. T.	Hendersonville	

DR. THOMAS BENTON ASHBY

BY

MOIR S. MARTIN, M. D., MOUNT AIRY

"Generous as brave,
Affection, Kindness, the sweet offices
Of Love and Duty, were to him as needful
As his daily bread."

The subject of this sketch was born near Stuart, in Patrick County, Virginia, on the 25th day of February, 1861. He was the son of L. W. and America Ashby, who removed to Mount Airy, N. C., in 1875. He was educated at the Mount Airy Academy, at that time a very fine training school, and at the College of Physicians and Surgeons, Baltimore, where he graduated in 1885 and passed the State Board of Medical Examiners the same year.

He located in Mount Airy and began a general practice which he continued with ceaseless activity and indefatigable energy up to the day of his death.

He was a member in good standing of the Surry County Medical Society, the Medical Society of the State of North Carolina, American Medical Association, and Southern Medical Association.

In his untiring ministry to rich and poor, to townsmen and country people, he reminds one of Ian McClaren's most amiable and noble character—"A Doctor of the Auld Schule." To hundreds and thousands of friends, "his memory is like ointment poured forth."

He was married March 1st, 1899, to Miss Myrtle Ross, daughter of Mr. and Mrs. L. F. Ross, of Greensboro, N. C., and this remarkably happy union was blessed with seven children—one little boy and two baby girls preceding their father to the Better Land. His Christian wife, four fine sons, and two sisters are left to mourn for him and to cherish the memory of ten thousand acts of kindness and expressions of tender affection.

Dr. Ashby had been in declining health for several years, but he could not be persuaded to give up his practice; and he literally "ceased at once to labor and to live" on the ninth day of April, 1922. He was sitting at the bedside of a patient when the end came, and his wish to die in service, was gratified.

Dr. Ashby was a Christian. At the age of twelve, he was happily converted, and united with the Methodists at Salem Church. When but a boy he superintended the Sunday-School at Oak Grove, and for more than twenty years he was an officer in the Church. He was always a friend to the ministers, and a liberal contributor to the support of schools and churches.

He was a member of the Masonic and Junior Orders, and dearly loved by his fellows.

Dr. Ashby was a kind and considerate man, a faithful and generous friend, a skilful physician, a good citizen, a clean, upright, magnanimous man. He will be greatly missed.

IN MEMORIAM

KEMP PLUMMER BATTLE

BY

A. W. Knox, M. D., Raleigh

Dr. Kemp Plummer Battle, of Raleigh, N. C., died at the age of 63, on March 23, 1922, at Chestnut Hill Hospital, Philadelphia, after a lingering illness of seven months—whose fatal issue was due to septic endocarditis.

He was laid to rest in Oakwood Cemetery at Raleigh in the afternoon of March 25, surrounded by many of his devoted friends.

Born in Raleigh, N. C., on March 9, 1859, he was the eldest son of the late Dr. Kemp Plummer Battle (a former President of the University of North Carolina) and Martha Ann Battle, both of Raleigh and later of Chapel Hill.

His paternal grandparents were Judge William H. Battle of Edgecombe County and Lucy Martin Plummer, of Warren. On his mother's side he was a grandson of James S. Battle, of Edgecombe County and Harriet Westray, of Nash.

He was graduated from the University of North Carolina at Chapel Hill in 1879, and received his degree of M. D. from the University of Virginia in 1881, and also from Bellevue Hospital Medical College, in New York City, in 1882. He served as Interne in the Charity Hospital on Blackwell's Island, New York, from 1882 to 1883, and in Blackwell's Island Insane Asylum during part of the year 1884. In the following year he was Assistant Surgeon in the U. S. Marine Hospital Service. He then, in 1886, went to Europe and studied—chiefly in the London hospitals—to prepare himself for his life-work as a specialist in diseases of the Eye, Ear, Nose and Throat.

Returning to Raleigh, he entered into partnership with Dr. Richard H. Lewis, his brother-in-law, under the firm name of Lewis & Battle, becoming one of the three first specialists in North Carolina in this branch of the profession. Dr. John B. Wright joined them in later years, and Dr. V. M. Hicks in 1921—and the firm was, thereafter, Lewis, Battle, Wright & Hicks.

He was one of the faculty of the Leonard Medical School for Negroes until its four year course was discontinued; and from 1903 to 1910 was Professor of Diseases of the Ear, Throat and Nose in the University of North Carolina's Medical Department, whose students of the third and fourth years were taught in Raleigh. For many years and up to the time of his death he was Secretary-Treasurer of the Board of Trustees of St. Mary's School, a Director of the Mechanics Savings Bank and a vestryman of the Church of The Good Shepherd.

Dr. Battle was twice married—first, to Miss Eliza N. McKee of Raleigh (a sister of the late Dr. James McKee) on February 4, 1890, who died April 12, 1919; and, in October, 1920, to Mrs. Sallie Hall Strong of Raleigh, who survives him. His three living brothers are: Thomas H. Battle, of Rocky Mount; Herbert B. Battle, of Montgomery, Alabama; and Dr. William J. Battle, of the University of Texas, at Austin.

Temperamentally quiet, modest and retiring, Dr. Battle yet had strong and deep convictions and tenaciously maintained them, yet frankly surrendered them when convinced, by evidence, they were no longer tenable. And, like all truly broad-minded men, he was willing to say: "I don't know," when sufficient evidence was lacking to satisfy his mind. Of a gentle and kindly nature, he was considerate of the opinions, and tolerant of opposing views, of others—however radically at variance with his own. In discussions at medical societies and other organizations, it was his habit to "hear both sides" before speaking, then balance their conflicting arguments, weigh well the *pros* and *cons* advanced by each and declare his own conclusions.

He held, and deserved, the respect and esteem of all who knew him. Undemonstrative by nature though he was, he had a warm, sympathetic and tender heart—which spoke through his actions, rather than words.

Simple and unpretentious in his bearing, Dr. Battle so well exemplified the high qualities of a true-hearted, upright manhood that —in my thought—he measured up to the estimate of David, the "Sweet Singer of Israel," so vividly portrayed in the Fifteenth Psalm—every one of whose seven verses, here following, seems to me to be truly applicable to our friend who has just crossed the threshold ahead of us and stepped into the beautiful life beyond—heroically brave and patient through his long and trying illness:

"1. Lord, *who* shall dwell in Thy tabernacle? or *who* shall rest upon Thy holy hill?

"2. Even he that leadeth an uncorrupt life, and doeth the thing which is right, and speaketh the truth from his heart.

"3. He that hath used no deceit in his tongue, nor done evil to his neighbor, and hath not slandered his neighbor.

"4. He that setteth not by himself, but is lowly in his own eyes, and maketh much of them that fear the Lord.

"5. He that swereth unto his neighbor and disappointeth him not, though it were to his own hindrance.

"6. He that hath not given his money upon usury, nor taken reward against the innocent.

"7. Whoso doeth these things shall never fall."

ISAAC M. TAYLOR, M. D.

BY

JAS. K. HALL, M. D., RICHMOND, VIRGINIA

Isaac Montrose Taylor was called away by death on November 26, 1921, at his home in Morganton, North Carolina. He was born in Newbern on October 29, 1857. His father was Alexander Taylor, a physician, and his mother was Sarah A. (Cole) Taylor. In 1879 he was graduated from the University of North Carolina with the degree of Ph. B., and in 1882 he received the degree of Doctor of Medicine from the College of Physicians and Surgeons in New York City. In 1889 he was united in marriage to Susan M. Evans, of Fayetteville, North Carolina.

For a period of about four years after graduation, Dr. Taylor was engaged in private practice in a rural district in Rowan County. I have been told by Dr. John Whitehead that as a family physician Dr. Taylor greatly endeared himself to his people—by his careful medical attention to them, by his integrity, by his keen sense of humor, and by his comforting sympathy. In 1886 he became a member of the medical staff of the State Hospital at Morganton,

which was known at that time as the Western North Carolina Insane Asylum. During the latter years of this service he was First Assistant Physician, and this responsible and difficult post he occupied to the entire satisfaction of his superior, Dr. P. L. Murphy, the distinguished Superintendent, as well as to the Board of Directors. The patients were devoted to Dr. Taylor, because he gave himself to them freely and without stint. This service in the State Hospital under the tutelage of Dr. Murphy gave Dr. Taylor excellent training, and in 1901 he resigned from the staff of that institution, and established in Morganton a private sanatorium—Broadoaks—for the treatment of nervous and mental diseases. Although Broadoaks was the pioneer private hospital in the State for the treatment of such diseases it immediately became a splendid hospital because it bore the impress of its founder's splendid ability and character.

Dr. Taylor's attainments were recognized by his fellow-physicians, and they drafted him for service in various capacities. For several years he was a member of the local board of health, and in 1915-16 he was president of the Board of Medical Examiners of North Carolina. His membership in the State Medical Society was long-standing. He held fellowship in the American Medical Association; in the American Medico-Psychologic Association; the Tri-State Medical Association; and the Southern Medical Association. Immediately upon the entrance of the United States into the European war Dr. Taylor offered his services to his country, but he was detailed for duty at home as a member of the Medical Advisory Board. He was a Mason and an active Shriner. In religion he was an Episcopalian.

But of his doings the record is of sufficient length. What of the man—his physique, his personality, his soul—those qualities that made him immortal? We remember his low, stooped, rather stout, quiet, slow-moving form. He disliked noise, clatter, bustle, disorder, coarseness, pretense and ostentation. He had splendid sense. Although he received degrees from two excellent institutions most of his learning was acquired outside the classroom. He was always a student. In spite of the fact that his vision was not good he was the keenest observer, (and like Lafadio Hearn on the church steeple in the fog), Dr. Taylor saw clearly many things which others did not see at all. He made acquisitions with all his senses. He beheld with his mind rather than with his eyes. Like the roentgen rays his vision penetrated. He knew the ways of mankind. He understood human motives. He knew the mainspring of conduct. Like Marc Antony, it was possible for Dr. Taylor to say of his fellowmen: "I am in their bosoms and I know wherefore they do it."

He had an intelligent interest in practically everything—in mankind, in nature, in medicine, in things of this world, and in those beyond mortal vision. He thought much but said little. Sometimes his articulation exhibited some difficulty or tardiness, but he never experienced mental doubt or confusion. He knew what he thought, his vocabulary was large, his diction excellent, and verbally and in writing he gave splendid expression to his opinions. His thought processes were unique, his speech was accurate and often epigramatic.

His temperament was judicial. He never lost his equilibrium. He developed opinions of his own, respected them, and was willing to stand by them even if the crowd left him standing alone. He was often called into court to give an opinion about a matter of the mind. On such occasions he exhibited always high courage, extreme modesty, but always a thorough understanding of the situation. He was always embarrassed by being seated in a position so conspicuous as the witness chair. Even though his modesty was made to suffer because of such a situation, he never lost his head, and always he was able, even in the hands of the ablest barrister, to take excellent care of his opinions.

Dr. Taylor was exceedingly frank and sincere and outspoken. He hated sham and pretense and insincerity. He was loyal to his friends, to his profession, to his church, and to his State. Although he looked rather too stout and phlegmatic to be keenly responsive, yet it is a fact that he had the keenest sense of humor, and he was a delightful companion. His mind fairly scintillated, and I can recall many of his brilliant remarks. He got as much joy out of life as an unsophisticated child, because his interest in things was universal, and he observed and comprehended everything within his reach.

But in spite of the fact that his work brought him into daily contact with sorrow and distress and even though he saw souls laid bare, he was charitable, because he saw always with a deep-seeing eye and an understanding heart, and he knew human frailties. He gave of himself and of his substance. He loved young people because he himself was young in spirit, and young people loved him. No accumulation of years could have made him old. Eternal youth lived in his heart.

His departure from amongst us is a personal loss to each of us. He loved this Society. He always attended its meetings. He is with us now in spirit. His going away is a loss to the State, to the medical profession, to society, to good fellowship, and to his family. But we are comforted by the satisfying realization that during his brief stay amongst us he did a man's work, he made countless lives more comfortable, more efficient, and more happy. Let him have his well-earned sleep.

DOCTOR DANIEL GREENLEE CALDWELL

November 1, 1862—May 13, 1921

Out of respect to custom and not because it is important, we begin this short sketch of our friend with the usual biological data.

Daniel Greenlee Caldwell was born November 1, 1862, and died May 13, 1921. He was married to Miss Marie Stuart Moffett of Rockbridge County, Virginia, in November, 1894. To this union there were born four children, Marie Stuart, Daniel Greenlee, Martha and an infant that was buried with its mother November 3, 1905. Dr. Caldwell was married a second time to Miss Camille McCorkle of Mooresville, in June, 1910. To this union one son, McCorkle Caldwell,

was born. The death, from acute leukemia, of his eldest daughter, Marie Stuart, June 15, 1914, was a severe blow from which her father, perhaps, never fully recovered.

Dr. Caldwell pursued academic studies at Davidson College and his professional studies in Baltimore where he graduated from the University of Maryland in 1885. During his professional career he took several post-graduate courses in New York and at the Johns Hopkins.

Dr. Caldwell's blood stream came from Scotland and was capable of rising to conspicuous heights when it encountered obstacles that challenged its reserve force. This quality of his blood was exemplified especially in the life of a paternal grandparent, the pioneer, Daniel Caldwell, an early settler of the Sugar Creek section of Mecklenburg County, and in the life of a maternal grandparent who was one of the signers of the Mecklenburg Declaration of Independence.

Dr. Caldwell, himself, had an abundant reserve of being, a strength of character that was never strained nor placed in bold relief by the circumstances of his life, but to anyone whose perception of the character of service is not blurred by the form of service his strength was evident. To every call of duty he responded with readiness and ease. For thirty-six uninterrupted years, from the time his license was issued, in 1885, to the time of his death, he was a loyal member of this Society; he was an officer in his church; he was a member of the school board; he was a member of the county board of health; to every call for service he gave an unconditioned response. There was no bargaining in his soul as to what he should get out of life for what he put into it—in all an unselfish citizen, unostentatious physician, a man who sought service, not recognition.

We see three sorts of greatness in human nature: a greatness of speech, a greater greatness of action, and yet a greater greatness of being. Greatness of speech and greatness of action are the more obvious forms of greatness and, therefore, monopolize the time of reporters and biographers. But these two forms of greatness are after all mere reactions to circumstance, greatness that is but half man, the other half circumstance. Greatness of being on the other hand is all man, standing in the purity of its strength independent of circumstances. It is a greatness that speaks in the still small voice, builds the durable temples of character as Solomon builded the temple of the Lord, without the sound of hammer, nor axe nor any tool of iron, and is seen only of those whose clear vision penetrates, X-ray like, the trappings of circumstance and sees the shadow of the Eternal as the substance of being.

This conception of half values and whole values, of false values and true values, was the guiding principle in the life of Daniel Greenlee Caldwell. When he in the spirit looks back over the path of his wanderings and contemplates the end of his journey he may feel as Robert Louis Stevenson expressed himself:

> "Here he lies where he longed to be;
> Home is the sailor, home from sea,
> And the hunter home from the hill."

DR. E. G. GOODMAN

BY

L. E. Farthing, M. D., Wilmington

Dr. E. G. Goodman, the only child of Mr. and Mrs. A. V. Goodman, was born at Town Creek, N. C., January 30, 1861, and died April 28, 1921. He was prepared for college in the public schools of Brunswick County, entering the University of North Carolina in the fall of 1882, and graduating from the University in June, 1885. He graduated from the University of Maryland in 1891, receiving his license to practice medicine in North Carolina, May 30, 1891. He joined the North Carolina State Medical Society the following year, and was a member of the Society until his death. He was married October 30, 1897, to Miss Maria Sandlin, this union being blessed with one child, E. G. Goodman, Jr.

After having completed his medical course, Dr. Goodman chose to locate in the county of Brunswick, the county of his birth, and there among his own countrymen to practice his profession. Contrary to the common expression, "A prophet hath honor save in his own country," Dr. Goodman was held in the highest esteem by all who knew him. He was one of the most conscientious men that it has been my fortune to know. Especially did he exhibit this trait in the management of his patients, always being ready and willing that his patient should have all that the medical profession could do, regardless from whom. He was therefore a safe physician. He was not only active in the practice of medicine for many years, but he was always ready to lend his aid to all things that tended to the good of the country, and especially for Bruswick County. Questions of a public nature were always on his mind, and, as someone said, he was seldom found on the wrong side of any public question.

Dr. Goodman's active practice was largely before the days of the automobile, and he was thus forced to make his calls on horseback or in a buggy over roads that were not as they are today, but alternating stretches of sand and mud. He did this without a murmur, and oftentimes when he himself was sicker than the patient he was visiting.

Not only was Dr. Goodman a fine physician, but he was also a good business man. He had the vision to see early in life that in order to leave anything that his family might be cared for after he was gone, he would have to engage in some side business, which he did, and had thus accumulated quite an estate.

LAURISTON H. HILL, M. D.

BY

Wade H. Bynum, M. D., Germantown

Lauriston H. Hill was born in Stokes County, North Carolina, on the 30th day of January, 1838, and died in the town of Germantown on the 13th day of May, 1921, at the age of 83 years, three months and fourteen days.

Dr. Hill was graduated from Jefferson Medical College, Philadelphia, in March, 1861, and at once entered the Civil War as a surgeon in the Confederate Army. At the conclusion of the war he settled in the town of Germantown, Stokes County, and began the general practice of medicine, which was continued without interruption up to within a few years of his death. Vigorous of mind and body, his professional services were in constant demand, and his strong constitution enabled him to minister to the sick over a wide area in Stokes and Forsyth Counties.

Dr. Hill became a member of the Medical Society of the State of North Carolina in May, 1879, and, also, was a member of the Stokes County Medical Society at the time of his death.

HENRY OTIS HYATT

BY

IRA M. HARDY, M. D., KINSTON

Henry Otis Hyatt came from a family and community with convictions. He had convictions and had the courage to defend them. In my judgment these were the distinguishing characteristics of Dr. Hyatt, and they were the qualities that have done most for the construction and development of this nation. They were the qualities we most need in our American citizenship in the future as we have had in the past. He came from a stock that has ever been tenacious of the principals it accepted as right, his family had that tenacity, and Dr. Hyatt well represented these principles in their conviction. He was a friend of every man that allowed him to be. He was a Democrat in every sense of the word. His courage and his loyalty to the principles he advocated, won for him the respect and friendship of those whom he opposed. He was not an orator and never pretended to be. He was a versatile writer, and his articles were published and read from Maine to San Francisco, in America and in Great Britian and Ireland.

Dr. Hyatt was a pioneer. He owned and operated the first private hospital in North Carolina. He was also an advocate of county public hospitals. He had the first public hookworm clinic, conducted by private means. Too much cannot be said of his generosity. A glance over his books since 1874 will show many accounts of widows marked paid in full. In spite of his liberality he accumulated quite a snug little fortune.

He was born May 5, 1848, at Tarboro, N. C., and died February 24, 1922. He was the son of Jesse B. and Margaret A. (Shirley) Hyatt, of English lineage, and of families which for three generations lived in Edgecombe County, where they became well and favorably known. He was reared in the town of Tarboro and received his education in the Male Academy located there. He began to study medicine in the office of Dr. N. J. Pittman and subsequently graduated from the University of Pennsylvania in 1868. Returning to Tarboro

Dr. Hyatt received on May 5, 1868, an appointment as assistant surgeon in the United States Army, and was placed on quarantine duty at Fort Hatteras, North Carolina. He saved his earnings and was soon able to locate, where he began to practice his profession, at Falkland. He soon outgrew the place and moved to Greenville, where he remained for about two years, thence moving to Kinston in 1872 where he remained until his death. In 1877 he was married to Miss Sibyl Miller and their union was blessed with three daughters and two sons, three of whom survive him, besides his wife, namely Miss Sibyl Hyatt of Washington, D. C., Miss Delia Hyatt of Kinston, and Dr. Anderson L. Hyatt, a practicing physician in Kinston. Dr. Hyatt was not connected with any religious denomination, although he greatly admired the broad principles of the Episcopal Church, of which his family are members. He would no doubt have been confirmed in the Episcopal Church but for an impairment in his hearing which kept him from attending church the last three or four years of his life.

Dr. Hyatt will be missed by his host of friends almost as much as he will be by his family, although he was a most devoted husband and loving father.

I cannot say enough for this good man who has gone to the great beyond, but I must not close without saying that he despised sham and loved only the truth and straight-forwardness.

"May he rest in peace."

DR. JOHN BAIRD, SR., MARS HILL
DIED AUGUST 16, 1921

A doctor of the old school, a country practitioner of sound knowledge in fundamentals and of broad common sense and human sympathy, Dr. John Baird, Sr., of Mars Hill, died yesterday full of years and lamented by hundreds who had profited by his medical skill and by his sane and helpful philosophy of life.

If it is true that every man's life contains material for a book, particularly was it so of Dr. Baird. In his four score years he had seen much and drawn lessons from what he saw. He had passed through experiences momentous for himself and his fellow men, and from his experiences he made deductions that threw light on the past and on the future. But a practising physician has little time to record his observations or to write down history as he sees it in the making. On his horse, day or night, Dr. Baird gave his energy and enthusiasm instead to relieving the ills of the people, to teaching a better way of living and to sowing, chiefly by example, the seeds of optimism and courage in souls sometimes overshadowed by adversity.

He was a Confederate soldier. Perhaps he imbibed something of the indomitable spirit of General Wade Hampton under whom he served—it was a common remark that on his horse he could easily be mistaken for the General. He was interested in the growth of his community and gave time and thought to that objective. He loved

men and women, loved to be with them and share their joys and sorrows. His life was a blessing and had a powerful influence for good in Western North Carolina. He rode hard, forgot to send bills, raised the standard of living in a pioneer country and gave probably more than a tithe of his income to the unfortunate.—Editorial in *Asheville Citizen,* August 17, 1921.

DOCTOR BROOKS

The people of Blowing Rock and vicinity have lost a good and useful friend in the passing of Dr. J. E. Brooks. He was one of the energetic medical forces in the State and had pioneered the way to the tuberculosis hospital now known as Sanatorium, where he built what was known as the Brooks Dormitory, the first structure in the State designed for the sanitary accommodation of tuberculous patients. He had been an active factor in the various progressive medical movements which have brought North Carolina to the forefront in health records, and had been living at Blowing Rock for a dozen years, having gone to that vicinity to fill the place made vacant by the death of Doctor Parlier. He was a man of gentle and faithful ministrations and had won a place of abiding love in the hearts of the people round about. His surroundings there may have been obscure in a way, but they could not conceal the beneficient influences of a medical service of developed eminence.

DR. GEORGE L. CLARK, CLARKTON DIED JANUARY 24, 1922

Clarkton, Jan. 24.—Dr. Geo. L. Clark, age 68, died at his home here today after an illness of ten days with pneumonia.

He was born November 27, 1854, married January 22, 1880, to Miss Alice Cromartie, educated at the University of New York and Bellevue, and was actively engaged in the practice of medicine for 45 years in the counties of Bladen and Columbus. Dr. Clark was very successful in both his profession and business. For several years he was president of the county medical association, and for 25 years was local surgeon for Seaboard Air Line.

Although too busy to aspire to political position, Dr. Clark was a leader in all moral and religious movements in the community in which he lived.

He is survived by two sons, Dr. Eugene S. and D. D. Clark; six daughters, Mesdames Parlow, of Union, S. C.; Margarete, Harrington, R. K. Craven and Misses Amanda and Alice Clark, all of Clarkton. The deceased was a brother of Dr. Byron Clark, of Salisbury, and Hon. O. L. Clark, of this place.

DR. OSCAR EASON, GOLDSBORO
DIED JUNE 29, 1921

Dr. Oscar Eason, Goldsboro, N. C., aged 37, died June 29. Dr. Eason graduated at the University of North Carolina in 1910 and joined the State Society in 1911. He was at the time of his death president of the Wayne County Medical Society. He was prominent in the social circles of this city, and well known throughout eastern North Carolina as an eye, ear, nose and throat specialist.

Dr. Eason moved here some three years ago from Johnston County where his remains will be conveyed tomorrow for burial at the old homestead near Selma. He is survived by his wife.

DR. A. M. HERRON, CHARLOTTE

Resolutions Adopted by Mecklenburg County Medical Society

"Whereas, it has pleased Almighty God to remove from our midst our friend and associate, Dr. A. M. Herron,

"And, whereas, his high character, his eminent ability in his profession, his long and devoted service to humanity and this society, and his lovable personality have greatly endeared him to us,

"Be it resolved, first, that in his death we feel that we have suffered a great loss,

"Second, that a copy of these resolutions be sent to his sorrowing wife and children,

"Third, that a copy be spread on the minutes of this society,

"And, lastly, that a copy be sent *The Charlotte Observer* and *Charlotte News.*"

Dr. Herron was 61 years old, having been born in Mecklenburg County January 20, 1860. He was the son of Dr. Isaac W. Herron and Lethia Cooper Herron. His father was a well-known physician in this section of the State who practised medicine in this county half a century prior to his death. Before settling in Charlotte sixteen years ago, Dr. Herron practiced medicine in Steel Creek township for nearly thirty years.

DR. J. LUTHER McMILLAN, RED SPRINGS
DIED NOVEMBER 8, 1921

Red Springs, Nov. 9.—Dr. Luther McMillan, prominent physician and surgeon, died here yesterday morning at 8 o'clock. He had been confined to his home for six months, being a sufferer from heart trouble.

Dr. McMillan was a native of Robeson County and the oldest physician in the county. On April 2, of next year he would have reached

the age of 67. He was the first medical student of the University of North Carolina, later attending lectures at Jefferson Medical College in Philadelphia, graduating in 1881 from the University of Maryland. He was a member of the Medical Association of the Fifth District, North Carolina Medical Association and the Southern Medical Association. He was a Mason, a Pythian and an Odd Fellow. For many years he was a member of the board of trustees of Flora MacDonald College and had been college physician since its foundation.

He is survived by his wife, a son, Douglass, a daughter, Rosa, wife of Dr. N. M. Giggs, of New Bern. Dr. McMillan was a public spirited man, interested in church and community life and in a quiet and unassuming manner carried comfort and help to many homes. The funeral was held at 11 o'clock today from his residence.

DR. E. D. MANN, SAXAPAHAW
DIED NOVEMBER 20, 1921

Burlington, Nov. 21.—Dr. E. D. Mann, of Saxapahaw, died at his home yesterday in his 82nd year after a brief illness. Dr. Mann was perhaps the most widely known man in northern Chatham and southern Alamance counties, where for the past 50 years he had practiced his profession of medicine. He has led an exceedingly active life. He was born in Chatham county in the year 1840, and spent his early days on the farm. He served four years in the war between the states in the Third North Carolina Cavalry, and was seriously wounded at Ashland, Va., but was able to return to the service. After the war he attended Virginia Medical College and in 1868 began the active practice of medicine in which profession he continued active until he was more than 80 years old.

He was twice married, first to Emeline Love, daughter of Col. Robert Love, of Chatham County, and upon her death he married Sarah Woody, daughter of Nathaniel Woody of Alamance County. He leaves surviving him, one brother, S. W. Mann, of Bynum, four sons, C. N. Mann and Ira Mann, of Chapel Hill, E. W. Mann, of Saxapahaw, and W. L. Mann, of Albemarle, and four daughters, Mrs. T. H. Tysor, of Asheboro, Mrs. P. G. Lea, of Burlington, Miss Maude Mann, of Sanatorium, and Miss Beulah Mann, of Saxapahaw. The funeral was held at Old Browns Chapel Church in Chatham County this afternoon.

DR. W. W. OLIVE, DURHAM
DIED APRIL 5, 1922

Dr. W. W. Olive, of Durham, died at a hospital at Rochester, Minnesota, on Wednesday night. This news was received with sorrow by the people of this section. He was the son of the late Henry Calvin Olive, one of the most prominent and popular men this section has produced. Dr. Olive inherited a love for his home com-

munity and people, and upon his father's death, he and his two brothers, L. S. Olive and Percy J. Olive, of Apex, took up the work of joining in with the home people for the up-building of the town and community and ever since that time have been together in this effort.

Dr. Olive was 45 years of age, having been born in Apex in 1877. Beginning work early as a telegraph operator, he developed into an expert and served for many years in the southern cities with the Associated Press, part of the time with *The News and Observer* at Raleigh.

While serving with the *Charleston News and Courier* he took a classical course at the Charleston college preparatory to entering upon the study of medicine at the University of Maryland. He completed his medical education at the latter institution, receiving second honors in a large class. By virtue of his standing in the graduating class he was given the position in the large hospital connected with the University Medical School at Baltimore, where he gained valuable experience during a year's service.

Upon the completion of his service in Baltimore he returned to his native state and located at Durham in the practice of his profession, where he has since remained. In Durham he has enjoyed wide popularity and had for many years a very remunerative practice.

For two or three years prior to his death he had taken post-graduate courses at the famous clinics of Mayo Brothers, where he died. Last spring he went to their institution to have an operation for gall bladder, bile duct and pancreas trouble. They prepared him to return home to return for the main operation later. Dr. Olive loved his profession and despite the wishes of his family and friends instead of resting, could not refrain from answering the calls made upon him. His life had been one of hard work and upon his forced return to the hospital he was in worse condition for the necessary main operation than when he left. They were never able to perform the main operation, and lacking this death was inevitable.

About the year 1909 he married Miss Agnes Makely, of Edenton, the daughter of the late Mr. and Mrs. Metrah Makely, a prominent and widely known family of that city. Mrs. Olive and two sons survive him, W. Wade Olive, Jr., about 10 years of age, and John Olive, about six years of age.

His mother, Mrs. Lydia Lindsay Olive, of Apex, a sister, Mrs. John M. Harry, of Charlotte, and two brothers, Lindsay S. Olive and Percy J. Olive, of Apex, survive him.—*Durham Herald.*

DR. J. F. SANDERFORD, CREEDMOOR DIED NOVEMBER 12, 1921

Durham, Nov. 12.—Dr. J. F. Sanderford, Creedmoor's most prominent citizen, died in Watt's Hospital here tonight at 7:30 after a stay of three weeks. He died of uremic poison.

Dr. Sanderford, a practicing physician and identified with most of the interests of Creedmoor, was 57 years old when he died, having lived in Creedmoor 32 years. He was born in Wake County December 17, 1864.

Surviving are two daughters, Mrs. R. T. Skinner and Miss Ruth Sanderford, and four sons, Bruce, Hubert, Harvey, and Fenner.

DR. H. P. UNDERHILL, WENDELL DIED NOVEMBER 18, 1921

Wendell, Nov. 18.—Dr. Henry Plato Underhill, pioneer citizen and one of the builders of Wendell, died at three o'clock this morning at Mary Elizabeth Hospital, Raleigh, following an illness of four months, a complication of heart diseases being the cause of his death. He had been critically ill for the past two weeks and had been under the care of specialists. He was taken to the hospital in July, where he remained two months, returning home to spend several weeks, before returning to the hospital three weeks ago.

Dr. Underhill was born in Selma, October 13, 1877, the son of Mr. and Mrs. J. A. Underhill. He received his early education at Selma Academy and entered the University School of Medicine, graduating in 1902 and passing the State Board in 1903. He started his career at Bayboro where he lived for three years. He was married December 14, 1903, to Miss Carrie May Lee of that town. He took post-graduate courses at Johns Hopkins, at Baltimore and the New York Post-Graduate School.

He moved to Wendell in August, 1907, and has been a leader in the development of this town and country. He served several terms on the board of town commissioners and has been prominent in fraternal circles, being past Worshipful Master of Wendell Masonic Lodge, member of Sudan Shrine Temple and a life long member of the Baptist church. He was a director in the Farmers and Merchants Bank and various other local business enterprises and was much interested in farming, owning several farms.

He is survived by his wife and four children, John, Margaret, Henry and Wingate, and the following brothers and sisters: James Underhill, Zebulon; John A. Underhill, Smithfield; William A. Underhill, Selma; Mrs. Mary Buffalo, Raleigh; and Mrs. Susan Bailey, Dunn. The body arrived from Raleigh this afternoon. Funeral services will be held at the home at 2 o'clock Saturday afternoon, conducted by Rev. R. L. Sadler, pastor of the Christian Church. Interment will be in Rock Ridge Cemetery. The local Masonic lodge will have charge of the burial services.

He was one of the leading physicians of the county and news of his death has caused universal sadness here. During the influenza epidemic of 1918 he worked two months without sleeping a night. His estate is valued at $75,000.

The Knights Templar will meet today at one o'clock to attend the funeral.

DR. R. W. WOOTEN, KINSTON
DIED MAY 20, 1921

Kinston, May 21.—The funeral of Dr. Richard Williams Wooten, one of the best known rural physicians in this part of the State, was held yesterday afternoon at 5:30 o'clock, burial taking place in a private cemetery in Lenoir County. Dr. Wooten died yesterday morning at 3 o'clock at his residence near Southwest battleground. He had been in ill health several weeks.

Dr. Wooten was 72 years of age and was born in Bladen county, the son of John Council and Mrs. Emmeline Wooten. His father was a large land-owner in Lenoir, and represented this county in the General Assembly several terms. The elder Wooten was a leader in North Carolina politics during the decades immediately preceding the War Between the States, and was "chairman" of the local inferior court in reconstruction days.

Dr. Wooten took a literary course at Davidson College and then entered the University of Virginia's medical department, from which he graduated in 1870 at the age of 22. He has been in active practice since that time. He spent a short time in Onslow county, going from there to Dover, where he was medical director for a large lumber company. He afterward came to this county, where many relatives resided, and established a lucrative practice in Lenoir county. He was president of the local medical society for a time. He took up his residence on a model 300-acre farm upon coming to Lenoir county, and developed it into an attractive country estate. He was twice married, the first time to Miss Carrie Duffy, of Onslow county, the second to Miss Josephine Mitchell Payne, of Lynchburg, Va., who survives him, together with the following daughters: Mrs. Herbert Carlton, of this city; Mrs. Oscar May, of Grifton, and Mrs. Elliott Russell, of Southwest. Dr. Wooten's family for several generation has been one of the most prominent in the Southeast.

DR. R. A. WHITAKER*

BY

IRA M. HARDY, M. D., KINSTON

Dr. R. A. Whitaker was born January 8, 1857, in Jones County, and died at his home on Washington Avenue, Kinston, N. C., July 17, 1916, being in his sixtieth year. He was prepared for college in the county schools of Jones, and entered Trinity College in 1878. He graduated in the Class of 1882 with the degree of Bachelor of Arts. In this same class were Drs. W. E. White of Richmond, Va., and George W. McRae of Philadelphia.

After a year at home he decided to study medicine, and in 1883 entered the College of Physicians and Surgeons of Baltimore, and

*It was my purpose to have written something in regard to Dr. Whitaker immediately after his death, but I could not secure from his modest family the information necessary. Only a few days ago I was able to secure some data, this explains the delay.

graduated in 1885, afterwards taking a post-graduate course at Johns Hopkins University. He immediately began practice in Trenton, N. C., and remained there until the year 1902, when he moved to Kinston, N. C., and formed a partnership with his brother, Dr. F. A. Whitaker. He was for many years before his removal from Jones County, Superintendent of Health for that county, and was also Superintendent of Health of Lenoir County for several years.

Dr. Whitaker retained a tender affection for the home of his birth and the people among whom he was reared. His birth was a short time before the War Between the States, in a strife-raging section, and he was one of the best products of that period. He was a member of a leading family of this part of the State, and stood high in North Carolina medical circles. He was a family physician for many homes. He was a polished gentleman of the old school, of excellent disposition, and cherished the friendship of thousands.

Dr. Whitaker was married in 1885 to Miss Martha Bidgood of Farmville, Va., who died in 1893, leaving three sons and one daughter. On April 8, 1896, he married Miss May C. Murray of Wilson, N. C., who survives him. Three children, two sons and a daughter came to bless this union.

Dr. Whitaker's professional ability was too widely known to need comment here. He was known over a large section of this State, especially in this and immediately adjoining counties, where the larger part of his practice lay. He was mourned in death as he was loved in life by a countless host of friends.

MINUTES OF THE HOUSE OF DELEGATES

TUESDAY, APRIL 25, 2:30 P. M.

ORANGERIE ROOM, ROBT. E. LEE HOTEL

The House of Delegates was called to order by the President, Dr. H. A. Royster, and the roll was called by the Secretary, Dr. L. B. McBrayer. The following delegates were present:

Alamance	Dr. J. R. Parker
Avery	Dr. W. B. Burleson
Beaufort	Dr. J. C. Rodman
Bertie	Dr. L. B. Evans
Buncombe	Drs. E. B. Glenn, C. V. Reynolds, J. B. Greene, W. M. Hollyday
Caldwell	Dr. A. A. Kent
Chatham	Dr. R. W. Palmer
Cherokee	Dr. N. B. Adams
Chowan-Perquimans	Dr. J. S. Mitchener
Cumberland	Dr. W. T. Rainey, Jr.
Davidson	Dr. D. J. Hill
Davie	Dr. A. B. Byerly
Forsyth	Drs. John Bynum, E. A. Lockett
Gaston	Drs. T. C. Quickel, L. N. Glenn
Guilford	Drs. J. T. J. Battle, J. T. Burrus, W. M. Jones
Harnett	Dr. W. E. Coltrane
Haywood	Dr. J. H. Way
Henderson-Polk	Dr. Guy E. Dixon
Hoke	Dr. R. McBrayer
Iredell-Alexander	Dr. J. E. McLaughlin
Lee	Dr. E. M. McIver
Lenoir	Dr. J. M. Parrott
Martin	Dr. B. L. Long
Mecklenberg	Drs. I. W. Faison, J. Q. Myers, R. F. Leinback, J. R. Alexander
Mitchell-Wautauga	Dr. C. A. Peterson
Moore	Dr. A. McN. Blair
New Hanover	Dr. J. G. Murphy
Onslow	Dr. Cyrus Thompson
Pasquotank-Camden-Dare	Dr. R. L. Kendrick
Person	Dr. B. E. Love
Pitt	Dr. G. G. Dixon
Randolph	Dr. F. E. Asbury
Robeson	Dr. N. A. Thompson
Rockingham	Dr. J. T. Taylor
Rowan	Dr. C. M. VanPoole
Sampson	Dr. E. T. Hollingsworth
Stanly	Dr. J. F. Laton
Stokes	Dr. J. L. Hanes
Surry	Dr. H. B. Rowe

Union	Dr. H. D. Stewart
Wake	Drs. V. M. Hicks, O. E. Finch, F. M. Register
Warren	Dr. G. H. Macon
Washington-Tyrrell	Dr. J. L. Spruill
Wayne	Dr. O. C. Daniels
Wilkes	Dr. F. H. Gilreath
Wilson	Dr. Ben H. Hackney
Yadkin	

The President presented his message to the House of Delegates as follows:

I recommend for your careful consideration:

I—That invitations to guests of the Society be extended only in accordance with Article IV, Section 4, of the Constitution and that the number limited to two or three, in the discretion of the President, who shall have the sole privilege of extending the invitations as provided by resolution adopted in 1915—THE NORTH CAROLINA MEDICAL SOCIETY FOR NORTH CAROLINA MEDICAL MEN.

II—That the chairmen of sections be elected by the sections either in open session or through a committee appointed for the purpose.

III—That the number of sections be not increased except for very strong reasons and that joint meetings between the different sections be arranged wherever feasible.

IV.—That registration at meetings be conducted strictly according to By-laws—Chapter I, Sections 3 and 4, especially in regard to the registration of qualified members only.

V That the program of the opening general session of the Society be shortened and simplified as much as possible, by having one invocation, one address of welcome and one response.

VI That the law creating the conjoint session of the State Board of Health and the Society be repealed and that hereafter the reports of the President of the State Board of Health and of the State Health Officer be read and discussed as a part of the program of the Section on Public Health and Education.

VII—That if the minutes of the North Carolina Public Health Association be published in the Transactions of the Society as heretofore, the said Association or the State Board of Health shall pay the expenses of such publication.

VIII—That a medical journal be established, which shall be the official organ, owned and published by the Society and containing no unethical advertisements, this journal appearing monthly and taking the place of the present volume of Transactions.

IX—That the following suggestions for section chairmen, sent to each of the present incumbents previous to this meeting, be adopted as a guide to promote the efficient conduct of the scientific sessions and, if approved, that a copy be furnished all section chairmen each year by the Secretary of the Society:

1. Each chairman is expected to read a paper which constitutes the chairman's report and comes first on the program of the section.

2. No papers should be listed without titles.

3. Speakers must be limited to twenty minutes for papers (fifteen is better) and five minutes for discussions. This rule applies to members and guests alike and is not to be waived in any case. To do so would require an amendment to the By-laws. Do not "extend the time" of any speaker.

4. If an essayist is absent, his paper should be put at the end of the program for that particular session, and if not present when the session adjourns, it should be heard at the conclusion of the day's session or of the session on the following day. If a reader is absent throughout, his paper shall be read by title and not by proxy.

5. Recognized rules of order should control the parliamentary proceedings of the sections.

6. It is important that the meetings be called to order on time and adjourned at a reasonable hour to fit into the general program.

7. According to an arrangement adopted by consent last year the chairman of each section may appoint a committee to propose a name for his successor, provided this meets with the approval of the incoming President. This should be announced at the final meeting of the section.

8. By grouping papers on the same or similar subjects it will be possible to combine the discussion after the reading of such a group of papers.

Upon motion by Dr. Jno. Q. Myers, the following committee was appointed to confer upon the President's address and make recommendations to the House of Delegates: Dr. J. M. Parrott, Dr. M. R. Adams, and Dr. E. J. Wood.

REPORT OF COMMITTEE ON SCIENTIFIC WORK

The report of this Committee was read by Dr. E. J. Wood, Chairman, as follows:

According to the Constitution of this Society the Committee on Scientific Work seems to have the simple function of arranging the program for the annual meeting. It may be that this has been changed or added to, at any rate, the Secretary has called for a report and your Committee trying to keep pace with the noble example of our President in his zealous endeavor to improve the tone of this Society, thereby directly improving the tone of the whole medical situation in North Carolina, has broadened the literal interpretation of the article in question in the Constitution and attempted to cast about the State and see just what the scientific conditions are from which in the future this Society must by every right draw its material.

With our President we feel that there is enough talent and to spare in the medical profession of this State without having to "beat the bushes" every year for outsiders to tell us what our men already know and oftentimes better than our imported lecturers. Until some inroads have been made in our own home supply we feel that we can safely stay at home so far as making up our yearly scientific program is concerned. With no desire to take on a commercial attitude we might well watch the activities of the Made-in-Carolina Club and take to heart some of the fine principles for which it stands.

An effort has been made to make at least a cursory survey of the research activity throughout the State. Most of our observation must of necessity be drawn from the medical publications. Our men are not given to medical publicity. Like our people generally, they do great things and say little about them. This is a commendable trait but to be deplored in this instance. Our members should be reminded of the fact that clinical research: the finest type of medical research, can be as well done in North Carolina as in New York or Chicago. James MacKenzie introduced the graphic study of the heart into medicine from the office of a general practitioner in a manufacturing town and nothing has been contributed of greater importance than this. It was my privilege recently to visit the hut in which Edward Jenner did his vaccination experimentation. The result of this country doctor's work needs no mention now but it might be of interest to know that neither Murphy nor Manteo are more isolated, nor smaller nor poorer, from a medical point of view than is this little village of Berkeley in Gloucestershire. The clinical material in North Carolina is all that could be asked for and there are hundreds of unsolved problems. Recently blastomycosis has been repeatedly diagnosed, and there are many cases of myasthenia gravis, both of which need the attention of intelligent men. Amœbic dysentery is abundant in the eastern counties and

hemoglobinuric fever still occurs, though it has reached its last lair, most of its former abiding places having been long ago denied it. There are many cases of pyloric stenosis in the new-born which could well engage the attention of well-trained men.

Throughout the State will be found evidences of the highest order of scientific clinical research. It is regrettable that more of it is not published. When we reach the goal of a standardized hospital in every county seat at least opportunities for such work will be materially increased. In the meanwhile the country doctor need not think he is too busy, nor too isolated, nor too poor nor too ignorant to be at work on his local problems. Our late beloved J. L. Nicholson never allowed such excuses to stand in his way and we have all had the pleasure of reading the contributions he made with Rankin, on hookworm, in the German journals. The day of isolation for the country doctor is over just as much so as the day of bluffing the ignorant public, who are no longer ignorant, is over. We either have to furnish the goods or the patient cranks up and goes to the next town. A man's research is a very sensitive indicator of his real professional standing.

We would suggest that the Society undertake to keep a complete bibliography of every publication made in the State or by a fellow or member outside of the State, that each year this list be published possibly with a very brief abstract, that each writer be expected to submit a reprint or a journal containing the article for the archives and for yearly binding.

Our attention is particularly attracted to the scientific work being done at the State Tuberculosis Sanatorium. Among the vital things is a fine contribution correcting the idea that basal metabolimetry can be used to separate incipient phthisis.

Another point of the highest type of work is at the State University. MacNider, particularly, must alone out of all the State be designated as our leader. His work continues and his contributions on the kidney under various experimentally produced conditions has brought us honor and distinction not only throughout the length and breadth of this country but equally so abroad.

Dr. J. M. Parrott moved that a permanent committee be elected, bearing the name and designation of this one, for the particular work indicated in Dr. Woods report, to serve for a period of five years, the members to be Dr. E. J. Wood, Chairman; Dr. C. A. Shore, Raleigh, and Dr. William deB. MacNider, Chapel Hill. This motion was carried. Upon motion by Dr. A. A. Kent, the report of the Committee was accepted and adopted.

REPORT OF COMMITTEE ON PUBLIC POLICY AND LEGISLATION

Dr. J. M. Parrott: As the only member of this Committee present, and also at the request of the Chairman, Dr. John B. Wright, I wish to say that there has been no matter concerning which the Committee would have to take action since the session of the Society a year ago. Therefore, the Committee has no report to make.

REPORT OF COMMITTEE ON PUBLICATION

The following verbal report was made by Dr. McBrayer for Dr. P. P. McCain, Chairman:

I am glad to have an opportunity to explain to the House of Delegates that the cost of printing has not been reduced. This year the printers were very glad indeed to get the job of printing the Transactions and there was no trouble in getting bids. There was as much as $1000 difference in the bids, and we took the lowest responsible bidder. For the second time in the memory of the Secretary the Transactions were printed outside the State, the work being done at Lynchburg. The contract provided that the Transactions should be out sixty days after the copy was delivered. The copy was delivered on August 15, and the Transactions should have been out on October 15. It seems that the printers, after getting the work, put it on as an odd job and worked on it when they got ready. The Transactions were delivered on April first and mailed out immediately. Barring a few errors in initials, etc., I think the printing is better than in some time.

REPORT OF COMMITTEE TO RECEIVE AND HANDLE FUNDS OF EXAMINING BOARD

Dr. J. M. Parrott: We have no report to make. We have given the matter a good deal of thought, but have been unable to agree. We have been holding the funds all right. Some of us think that they ought to be turned over to the Board of Medical Examiners and lost in their funds; some think that the Committee ought to be continued for holding the funds intact; others think various things. The Committee will be obliged to the House of Delegates if it will suggest a way to solve the problem.

Dr. A. A. Kent moved that the Committee to Receive and Handle the Funds of the Examining Board be continued, that the money now in the hands of the custodian of the fund be turned over to this Committee, and that the Committee be empowered to spend the money at their discretion, under the limits assigned by the Attorney General. Motion carried.

(At subsequent meeting of House of Delegates, a motion was made that the motion by which foregoing report was adopted be recon-

sidered, which was carried. The question on the motion to adopt foregoing report being put, the motion to adopt was unanimously defeated.)

COMMITTEE TO CONFER WITH NORTH CAROLINA TEACHERS' ASSEMBLY

Dr. George M. Cooper, Chairman, presented the following report:

Raleigh, N. C., April 20, 1922.

To the Secretary of the North Carolina Medical Society:

Dear Sir: As Chairman of Committee representing the North Carolina Medical Society for the purpose of collaborating with a committee from the North Carolina Teachers' Assembly with reference to the question of closer co-operation between the two bodies in the teaching of Physiology and Public Health and Sanitation in the public schools of North Carolina, I do hereby attach the report of a meeting of this Committee, held on July 16, 1921.

The Chairman of the Committee from the Teachers' Assembly, Dr. J. H. Highsmith, agreed jointly with us to have a meeting of both committees together on July 16, 1921, but for various reasons the Committee from the Teachers' Assembly did not show up. Therefore, this report covers the activity of these efforts so far as I am aware, in full.

It will be noted under Section 2 of this report that the time to be spent in teaching health subjects in schools was to be stated in this report after further investigation and conference with Superintendent E. C. Brooks. The representatives of your Committee, however, on further deliberation decided that as this was a matter in which Superintendent Brooks and his associates are fully responsible, that this should be left entirely to them.

It will be noted under Section 3 that the text books to be recommended for teaching in the schools was to be done after all the members of this Committee had read all the proposed books more thoroughly. In this connection I would like to state that it was thought best in this matter for your Committee to wait to be asked for advice by the State Textbook Commission, rather than to undertake to offer free advice, which was unsolicited.

In conclusion, it may be well to state that the Teachers' Assembly and the North Carolina State Medical Society are really and actually more than meeting the requirements along this line of the American Medical Association Council on Public Health and Education and, therefore, in conclusion, I would like to point out that the most important object to be stressed in this Committee Report is that embodied in Section 1 of the Report, in which it is urged that the educational authorities of North Carolina place the proper importance on teacher training in the institutions making a business of training teachers, in order that they may be qualified to teach the subjects they are undertaking.

(Signed) G. M. Cooper, *Chairman.*

Raleigh, N. C., July 16, 1921.
State Board of Health Office.

We, the Committee appointed and representing the North Carolina Medical Society for the purpose of inaugurating a closer co-operation between the Public Health Forces and the Teaching Profession in North Carolina with reference to the teaching of Physiology, Hygiene, Public Health and Sanitation, do unanimously recommend the following:

1. That the educational authorities of North Carolina be urged to establish a department comprising the subjects mentioned in this preamble in all educational institutions of the State engaged in teacher training, whether in whole or in part; this department to be manned by full time professors on an equal footing with professors in other departments; proper credits toward a degree to be given on the completion of this course.

2. Time to be spent in teaching health subjects in schools..... (to be filled in by Drs. Rankin and Cooper after further investigation and conference with Superintendent Brooks and associates).

3. Textbooks to be recommended after all the members of this Committee have read the proposed books more thoroughly.

4. Attention is called to the Modern Health Crusade and it is urged that this movement be supported in every possible way.

5. We heartily endorse the present system of Medical Inspection of Schools and recommend the continued co-operation of the public school officials and teachers in securing the correction of physical defects of the public school children.

(Signed) GEORGE M. COOPER, *Chairman.*
P. P. MCCAIN,
R. L. CARLTON,
W. S. RANKIN,
Committee.

REPORT OF COMMITTEE ON PUBLIC HEALTH ADMINISTRATION

The following report was read by Dr. J. Howell Way, Chairman:

Your committee has thought it well, on account of the undefined relation of the medical profession in many places to public health activities, and on account of the frequent and loose use of the term "State Medicine" to ask this House of Delegates (1) to define in a formal resolution what it conceives the term "State Medicine" to mean; and (2) to declare what it conceives should be the position of the State Society with respect to the variety of activities embraced in its definition of "State Medicine."

We therefore offer for your consideration and action the following resolutions:

RESOLUTION DEFINING THE TERM "STATE MEDICINE"

Whereas, the term "State Medicine" has a literal meaning so general as to include public practices and policies, some of which are desirable and some of which are objectionable, and

Whereas, the term "State Medicine" has been and is being used frequently and extensively with confused and without established meaning, and

Whereas, such use of the term has resulted in and continues to produce much misunderstanding, controversy, and antagonism, both within the profession and between the profession and the public, now, therefore, be it

Resolved, by the House of Delegates of the North Carolina State Medical Society that to prevent further loose use of the term with resulting misunderstandings and controversy and to clarify and facilitate intelligent discussion and action, "State Medicine" be and is hereby defined as follows:

"State Medicine" is any practice or policy provided for in the legislation acts of a state which has to do with the prevention or treatment of disease, and which may include any of the following:

1. Legislation which determines who shall be permitted and who shall not be permitted to treat disease and prescribes the conditions under which a person may practice medicine;

2. Legislation which provides for the education of the general public in matters of personal and public hygiene, giving to the people a higher appreciation of the value and use of medical science through printed matter, addresses, moving pictures, visiting nurses and other means of proved educational value;

3. Legislation which provides public laboratories for assisting the profession in the diagnosis of specimens of pathological material and for providing the profession with various biological products of preventive and curative value;

4. Legislation which provides for immunization by vaccines and sera of the general public against smallpox, typhoid, and other infectious diseases for which approved vaccines and sera are available;

5. Legislation which provides for the reporting of births, deaths, and communicable diseases and prescribes measures for the restriction of the spread of contagion;

6. Legislation which provides institutional treatment and care for the delinquent, the defective and the diseased, including institutions for the feeble-minded, the deaf and the blind, the psychopathic and insane, the morally delinquent, and the tuberculous;

7. Legislation which provides for the physical examination of school children and the detection of those which are retarded and which retard their classmates by defects so frequent among the school population as to have appropriately acquired the term "common defects of school children," to the practical end that the finding of such defects will stimulate an interest in both local profession and public that will result in their correction;

8. Legislation which provides dispensaries for the examination and treatment of diseases of such prevalence and far-reaching effect on the public health as to constitute large and unnecessary handicaps to social progress, as, for example, dispensaries for venereal diseases, and dispensaries in certain sections of the country for the treatment of trachoma and hookworm disease;

9. Legislation which provides for health insurance, especially as practiced in England, and which provides for panels of physicians who are paid out of public funds, and at rates fixed by the State.

RESOLUTION DEFINING POSITION OF THE NORTH CAROLINA STATE MEDICAL SOCIETY WITH RESPECT TO THE VARIOUS ACTIVITIES OF "STATE MEDICINE" AS DEFINED BY THIS SOCIETY

Resolved, That the North Carolina State Medical Society is emphatically opposed to health insurance as exemplified by its practice in England and on the Continent of Europe;

Resolved further, that this Society regards the treatment of disease at public expense as a practice that needs to be well considered and carefully defined, but realizes that there are certain conditions which not only justify but demand the administration of remedial and curative measures and agencies, and among such conditions recognizes and approves the following:

1. The institutional treatment of the psychopathic, the insane, the feeble-minded, the morally delinquent, the deaf and blind, and the tuberculous;

2. The treatment through public dispensaries of diseases constituting large social handicaps where the treatment of such diseases is a necessary part of their prevention, as illustrated in trachoma, hookworm disease, malaria, and venereal diseases;

3. The immunization of the general public against infectious diseases through the administration of vaccines and sera;

4. The treatment of public school children for those defects which exist as a bar to educational progress not only for the afflicted child but for the classes in which it recites;

Resolved further, That it is the sense of this House of Delegates that, in providing for the treatment of groups "2," "3," and "4" as above stated, the conditions and terms of such treatment should be submitted by those proposing it to the officers, and where possible, to the local medical society or, where there is no local medical society, to the majority of the legal practitioners of regular medicines for their consideration and approval.

Committee:
J. Howell Way,
President North Carolina State Board of Health.
Wm. P. Holt,
President Board of Medical Examiners.
Jno. A. Williams,
President North Carolina Hospital Association.

The report was discussed by Doctors J. T. Burrus, J. D. Williams, I. W. Faison, L. B. Evans, G. G. Dixon, J. L. Hanes, R. F. Leinbach, J. H. Way, A. A. Kent, and President Royster, after which Dr. Kent offered a motion that the resolutions lie upon the table for one year, that they be sent to the component county medical societies, and that the county societies be requested to discuss them and instruct their delegates to the next annual meeting how to vote on them. The motion was carried.

COMMITTEE ON THE MENACE OF DRUG ADDICTION

(See next session of House of Delegates.)

COMMITTEE ON MEMORIAL TO NORTH CAROLINA PHYSICIANS WHO DIED IN THE LATE WAR

This Committee made no report and was continued.

REPORT OF COUNCILORS

First District—Dr. B. F. Halsey, Councilor. No report.

Second District—Dr. J. C. Rodman, Councilor: We had one meeting in the Second District, at Greenville, with a very good attendance. We had the pleasure of having the President with us. Very good papers were read and we had a most excellent meeting. Our next meeting is to be in New Bern. There is no special report to make for the county societies in this district.

Third District—Dr. J. B. Cranmer, Councilor. No report.

Fourth District—Dr. E. T. Dickinson, Councilor. No report.

Fifth District—Dr. A. McN. Blair, Councilor: I wish to report very briefly that it has been the pleasure of the Fifth District to entertain the State Medical Society at three of the last four meetings.

If some one will provide a remedy for lack of interest on the part of our various secretaries, so that we may know that our county societies are at work, it will be a great help. I feel that in the Fifth District we have as many active members as in any of the other districts. I am very glad to say that the Fifth District stands for a section which is able to entertain, and that the men are always ready to serve.

Sixth District—Dr. W. C. Horton, Councilor. No report.

Seventh District—Dr. B. J. Witherspoon, Councilor. (Report presented by Dr. J. E. S. Davidson.) This district has some counties that are not as enthusiastic as they should be, but we had a wonderfully good meeting in the district, in Cabarrus County. Union County, Cleveland County, and one or two others are not as enthusiastic as they might be, but I am pretty sure that the next councilor can get Anson County back into the State Medical Society. One or two counties in this District have dropped out of the State Medical Society.

Eighth District—Dr. J. K. Pepper, Councilor. No report.

Ninth District—Dr. M. R. Adams, Councilor: In most of the larger counties in the Ninth District the organizations are pretty well kept up, but in some of the more sparsely settled counties it is difficult to keep up the enthusiasm. We had the pleasure of having the President of the State Medical Society with us at one meeting. We shall have another meeting in October at Morganton, and it bids fair to excel the meeting we had at Salisbury. We think that the Ninth District is in pretty good condition.

Tenth District—Dr. Eugene B. Glenn, Councilor:

Mr. President and Gentlemen: I have the honor to submit a brief report of the doings of the Tenth District Medical Society during the last three years. On account of the war and so many members of this Society being in the service, we were unable to perfect an organization or hold any meeting in the district in 1918.

On November 12, 1919, a re-organization was perfected at the Battery Park Hotel, in Asheville, with twenty-three members present. I say re-organization, because there had been no organization or meeting of the Society in the district for ten or twelve years previous. Only the organization was perfected at this meeting, no papers

read. The officers elected were: Dr. C. E. Cotton, President; Dr. B. L. Ashworth, Vice-President; Dr. P. R. Bennett, Vice-President; Dr. J. R. McCracken, Vice-President; Dr. J. S. Sample, Vice-President; Dr. Fred L. Siler, Vice-President; Dr. W. J. Hunnicutt, Secretary.

The next meeting of the Tenth was held at Asheville, October 14, 1920, at the Battery Park Hotel, with forty members present and two visitors. Nine papers were read at this meeting, eliciting free and full discussions.

The meeting generated much enthusiasm and widespread interest. An open house was held by the Board of Governors of the Meriwether Hospital in the afternoon from five to six, for members and visitors. Officers elected for the ensuing year were as follows:

Dr. Fred L. Siler, President; Dr. Guy S. Kirby, Vice-President; Dr. Guy E. Dixon, Vice-President; Dr. C. Z. Candler, Vice-President; Dr. J. M. Russell, Vice-President; Dr. J. B. Greene, Vice-President; Dr. W. J. Hunnicutt, Secretary.

A semi-annual meeting was called to meet at Canton, April 12, 1921, members present fifty, papers read ten. This meeting proved to be still more interesting and enthusiastic. The local members of the profession furnished a banquet, served by the good ladies of Canton, in the afternoon from five to six, and the Canton Band furnished music. The Champion Fibre Company furnished guides to conduct the members and visitors through their million dollar paper and pulp mill. This proved to be very entertaining and interesting.

Murphy was selected as the next annual meeting place, October 5, 1921. Members present at this meeting, forty-four, visitors four, papers read and discussed eight. Two addresses were delivered, one by the President of the State Medical Society, Dr. Hubert A. Royster, and the other by the Secretary of the State Board of Health, Dr. W. S. Rankin.

A banquet was furnished by the local profession, served by the ladies of Murphy.

Officers elected for the ensuing year were as follows:

Dr. Guy S. Kirby, President; Dr. N. B. Adams, Vice-President; Dr. J. R. McCracken, Vice-President; Dr. Dan Bryson, Vice-President; Dr. A. F. Toole, Vice-President; Dr. W. R. Kirk, Vice-President; Dr. W. J. Hunnicutt, Secretary.

These officers are the present incumbents.

A semi-annual meeting was held at the Southern Power Company's Club House, on Lake James, at Marion, on April 12, 1922. Members present, thirty-eight, papers read four, followed by full and free discussion. The Southern Power Company, besides donating the club house, provided the members and guests of the Society with motor and row boats. The local profession furnished luncheon and refreshments which were served by the ladies of Marion. Three hours were set aside after the meeting for fishing and boating on the lake.

Hendersonville was selected for the next annual meeting place, to be held some time in October, 1922.

From November 12, 1919, to April 12, 1922, there were four meetings of the Society. You can see that we had four meetings in spite of the year and a half we lost on account of so many of the profession being in the service.

It has been the purpose of this Society to hold the meetings in as many different parts of the district as they can be entertained, for the purpose of stimulating the interest of the profession to the fullest extent.

Many of the counties in the Tenth District have not enough physicians in the county to perfect a successful organization of a county medical society. They are kept so busy and the condition of the roads during the winter months, especially, have been such that they could not meet together regularly. Some of these counties tried combining two or three counties to enable them to perfect a successful organization. For example, we have the Polk-Henderson County Medical Society. We have now under construction a society to be known as the Macon-Jackson-Swain County Medical Society. This organization is not perfected, but will be probably within the next thirty or sixty days.

It is noted that the doctors of these counties above referred to have furnished a larger attendance in proportion to numbers than the counties where they are more fortunately situated, in relation to a local society.

It is my opinion that the interest manifested, the quality of the papers presented and the full and able discussions that followed, were not surpassed by any society in the State.

ANNUAL REPORT OF THE SECRETARY-TREASURER TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

We beg to submit herewith our annual report. You will find attached hereto the report of the fiscal transactions of this office with a certificate from the Page Trust Company showing balance in bank which agrees with our books. Your attention is respectfully called to the financial exhibit and you are requested to compare it with the financial exhibit of 1921 and the budget and remarks thereon.

The number of pages of Transaction were increased this year on account of the length of conjoint session, meeting of secretaries, lengthy reports of some important committees, minutes of North Carolina Public Health Association, etc., etc.

The expense of reporters for the last session is necessarily increased because of the increased amount of copy. Our Society is growing rapidly in intelligence, slowly in numbers, and the members

who attend want efficient reporters, and want their discussions printed correctly in the Transactions, and rightly so; therefore, we cannot expect the expense of reporting the meetings to decrease. We have canvassed reporters for the American Medical Association, Southern Medical and many court reporters and find that we cannot reduce this expense. The cost for reporting the 1921 meeting, as you will note in the financial report, was $637.74.

It is a matter of great regret to us that we were again unable to get out the Transactions promptly. The copy was turned over to the printer August the 15th, with an agreement that the Transactions would be delivered in sixty days—October the 15th. The firm paid no more attention to their contract, and delivered them to us the first of this month, about six months late. They were mailed out to the members the same day they were delivered to our office. We have used a different firm each year for the last four in an endeavor to get the cost down and prompt delivery, with very indifferent success, competitive bids being taken from as many firms as would bid. This year we had the Transactions printed by Brown-Morrison Company, Inc., Lynchburg, Va.

There is very little change in the total membership from last year. We certainly ought to have five hundred additional members. We must necessarily depend on the local county societies and many of them do not seem to be interested in 100 per cent membership in their counties. This office carries on considerable correspondence in order to help the county societies make every legally qualified physician a member. One thing we do is to write every eligible physician who is not a member a personal letter at least once a year asking him to become a member and endeavoring to show him the importance and value of such membership.

I am quite sure that you will all agree with me that the scientific program presented to this session is probably the best ever presented to this Society. The chairmen of the various sections are due the credit.

I cannot close this report without expressing my personal and official appreciation of the splendid work done by President Royster during the year. He has visited every district meeting, which feat has never been done by any other president so far as my knowledge goes, and all at his own expense. These visits I am sure have been inspiring and otherwise very helpful to the profession of the State.

STATUS OF COUNTY SOCIETIES

We have 96 counties that are in good standing for this year, quite a number of them with 100% membership. The following counties are not in good standing and no physician living in these counties is entitled to take part in the deliberations of this Society in any of its departments, except the Honorary Fellows: Alleghany, Gates, Graham, Jones.

We had on April 22, when the books closed, 1176 paid members, 94 Honorary Fellows—a total membership of 1270 against 1244 this date last year.

I am appending hereto a financial statement for the fiscal year ending April 22, together with certificate from Page Trust Company as to balance on hand:

Respectfully submitted,

L. B. McBRAYER, *Secretary-Treasurer.*

FINANCIAL STATEMENT

RECEIPTS

Balance April 21, 1921, as per statement in Transactions, page 442	$2,362.81
Interest on $2000.00, 5-2-21 to 8-12-21	22.22
Dues collected	4,281.00
Total Receipts	$6,666.03

DISBURSEMENTS

Check No. 90	—Southern Medicine & Surgery, program	$ 50.00
" " 91	—A. W. Snow, sten. work at Pinehurst	2.00
" " 92	—Wake County Medical Society, refund dues	3.00
" " 93	—Void	
" " 94	—Leonard Tufts, exp. reporter at Pinehurst	139.68
" " 95	—Miss Mary Robinson, reporter	70.41
" " 96	—Void	
" " 97	—Western Union Telegraph Co., April acct.	7.78
" " 98	—Southern Stamp & Stationery Co., seal	15.11
" " 99	—Mrs. J. T. Unger, reporter	111.00
" " 100	—Southern Stamp & Stat'y Co., rubber stamp	1.05
" " 101	—Miss Lula Gay, reporter	192.60
" " 102	—Mitchell Ptg. Co., letterheads & envelopes	91.25
" " 103	—N. C. Sanatorium for telephone calls	10.90
" " 104	—Western Union Telegraph Co., June acct.	78
" " 105	—Brown-Morrison, Transactions	833.33
" " 106	—Miss Mary Robinson, reporter	122.05
" " 107	—Western Union Telegraph Co., August acct.	1.69
" " 108	—Brown-Morrison, cuts	15.00
" " 109	—Western Union Telegraph Co., Sept. acct.	.94
" " 110	—Western Union Telegraph Co., Oct. acct.	1.19
" " 111	—Brown-Morrison, cut	7.50
" " 112	—Southern Stamp & Stat'y Co., rubber stamp	.65
" " 113	—Western Union Telegraph Co., Feb. acct.	1.38
" " 114	—N. C. Sanatorium, mailing Transactions (postage)	120.00
" " 115	—Brown-Morrison, Transactions	2,442.19
" " 116	—Western Union Telegraph Co., March acct.	2.20
" " 117	—Mitchell Ptg. Co., 2 M envelopes	10.64

Check No. 118—L. B. McBrayer, salary Secretary-Treasurer	600.00	
" " 119—A. W. Snow, clerical work	25.00	
" " 120—N. C. Sanatorium, stamps	72.23	4,951.55
Balance April 22, 1922		$1,714.48

DISTRIBUTION OF EXPENSES

Dues refunded, paid twice	$ 3.00
Postage, express, telegraph	219.09
Stationery, office supplies	118.70
Reporting meeting, Pinehurst	637.74
Printing Transactions	3,298.02
Salary Secretary-Treasurer	600.00
Clerk hire	25.00
Printing program, Pinehurst meeting	50.00
	$4,951.55

Aberdeen, N. C., April 22, 1922.

This is to certify that the Medical Society of the State of North Carolina has on deposit at the Page Trust Company, Aberdeen, a balance of one thousand, seven hundred, fourteen and 48 100 dollars ($1,714.48).

PAGE TRUST COMPANY,
E. S. Adams, *Assistant Cashier.*

The report of the Secretary-Treasurer was referred to the Finance Committee.

REPORT OF FINANCE COMMITTEE

We, your Finance Committee, have examined the receipts and disbursements of the Secretary-Treasurer and find them to be correct in every particular. We would recommend that the Secretary-Treasurer in the future submit a voucher for each item of disbursement.

The balance in the Treasury on this date is $1,714.48.

J. W. Long, *Chairman.*
E. S. Bulluck,
E. B. Glenn.

UNFINISHED BUSINESS

Dr. McBrayer moved the adoption of the resolution proposed at the 1921 meeting by Dr. James B. Bullitt, instructing the Program Committee to omit from the program in the future the Section on Anatomy, Physiology, Pathology, and Bacteriology. The motion was seconded and carried.

THE PRESIDENT: The next order of unfinished business is the resolution introduced last year at Pinehurst by Dr. J. E. S. Davidson, of Charlotte, as follows:

"*Resolved*: That the by-laws be changed and that the nominations of all officers shall be made upon the floor in open session, and that the Committee on Nominations be abolished; this resolution to lie upon the table for one year and come up at the 1922 meeting of this Society."

Dr. J. L. Hanes submitted the following resolution:

Resolved: That Sections 2, 3 and 4 of Chapter 5 of the By-Laws be and the same are hereby repealed. In lieu thereof, the following sections are hereby adopted:

"Section 2. Nominations of all officers shall be made from the floor in open session.

"Section 3. The nomination and election of officers shall be held on the second day of the annual meeting.

"Section 4. The election shall be by ballot, and a majority of the votes cast of the membership present at the general session shall be necessary to election."

The proposed resolution was discussed by Doctors H. D. Stewart, I. W. Faison, A. McN. Blair, J. G. Murphy, R. McBrayer, G. G. Dixon, J. S. Mitchener, L. B. McBrayer, A. A. Kent, J. E. S. Davidson, Eugene B. Glenn, H. A. Royster, E. A. Lockett and J. T. J. Battle. The motion to adopt was lost by a vote of 19 for, to 30 against.

NOMINATING COMMITTEE

The following were elected as members of the Nominating Committee:

First District	J. L. Spruill
Second District	J. C. Rodman
Third District	J. G. Murphy
Fourth District	B. H. Hackney
Fifth District	N. A. Thompson
Sixth District	J. R. Parker
Seventh District	I. W. Faison
Eighth District	J. T. Taylor
Ninth District	C. M. Van Poole
Tenth District	Guy E. Dixon

Dr. E. A. Lockett suggested the advisability of adopting an appropriate resolution concerning the two-year training course for nurses. No action was taken.

The Secretary submitted the following letter from *Southern Medicine and Surgery* in regard to printing the Transactions:

Charlotte, N. C., April 20, 1922.

Dr. L. B. McBrayer, Secretary,
North Carolina Medical Society,
Sanatorium, N. C.

Dear Doctor McBrayer:

I should like for you as Secretary to transmit the following proposition to the governing body of the State Society, for its consideration.

A great many of the state societies and other medical associations have seen fit to abandon the publication of the society proceedings and papers in book form and are publishing these now in a periodical journal. Sometimes this journal is financed and operated by the society itself and many times the society takes advantage of an already established publication. There are instances where such a journal has served as the official organ of several different societies.

Southern Medicine and Surgery is an established publication, owning and operating its own printing plant and for two years has served as the official journal of the Tri-State Medical Association of the Carolinas and Virginia, than which no society or medical association can have higher ideals as to medical ethics or nobler aspirations for the best good of the medical profes sion and the people its members serve.

In view of the trend of the times as well as the wisdom of using economy it would seem that the North Carolina Society might also wish to publish its proceedings and papers in periodical form and use, perhaps, *Southern Medicine and Surgery* as its medium. I wish, therefore, on behalf of this journal to submit to the State Society, exactly the same proposition which is in effect with the Tri-State Association, and which is operating most satisfactorily.

We will serve as the official journal of the society and publish during the year all papers read at the annual meeting and all proceedings of this meeting and send every issue of the journal for one year to each member of the Society at the rate of $1.50 per member. The secretary of the Society to furnish a list of members and also a transcribed copy of the minutes together with a copy of all papers read and the treasurer of the Society to give the Society's check for the total amount called for by the secretary's report.

The secretary, or authorized representative, of the Tri-State Association and the secretary, or authorized representative of the North Carolina Medical Society, together with the editor of *Southern Medicine and Surgery* shall mutually and jointly direct the policies of this publication and shall decide the nature of the reading and advertising matter it contains, and no article shall be published, nor any advertising shall be carried that is not agreed upon by each of these three representatives.

Any intentional violation of the terms of this agreement shall be considered sufficient ground for the immediate cancellation of the agreement.

I trust the Winston-Salem meeting will be the very best ever held in the history of the society, and believe me I shall be glad to serve you in any way that is possible. I am,

Yours very sincerely,
SOUTHERN MEDICINE & SURGERY,
M. L. Townsend, M. D., Editor.

This letter was referred to the Committee on the President's Address, which Committee had under consideration the printing of a state medical journal in lieu of the Transactions.

The House of Delegates then adjourned to meet the next day at 11:00 A. M., in the Coffee Room.

MINUTES OF HOUSE OF DELEGATES

WEDNESDAY, APRIL 26, 11:00 A. M.
COFFEE ROOM, ROBT. E. LEE HOTEL

The meeting was called to order with President Royster in the chair. The President called for the report of the Nominating Committee, which was presented as follows:

OFFICERS OF MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA—1922-1923

(Unanimously recommended by the Nominating Committee.)

President	Dr. J. W. Long	Greensboro
1st Vice-President	Dr. F. M. Hanes	Winston-Salem
2nd Vice-President	Dr. T. C. Johnson	Lumberton
3rd Vice-President	Dr. B. L. Long	Hamilton
Secretary-Treasurer	Dr. L. B. McBrayer	Sanatorium

COUNCILORS 1922-1925

First District	Dr. H. D. Walker	Elizabeth City
Second District	Dr. J. C. Rodman	Washington
Third District	Dr. E. S. Bulluck	Wilmington
Fourth District	Dr. K. C. Moore	Wilson
Fifth District	Dr. A. McN. Blair	Southern Pines
Sixth District	Dr. J. M. Templeton	Cary
Seventh District	Dr. B. J. Witherspoon	Charlotte
Eighth District	Dr. W. F. Cole	Greensboro
Ninth District	Dr. C. M. Van Poole	Salisbury
Tenth District	Dr. E. B. Glenn	Asheville

Committee on Publication	Dr. J. V. McGougan, Fayetteville Dr. E. A. Lockett, Winston-Salem Dr. M. L. Townsend, Charlotte
Committee on Obituaries	Dr. C. O'H. Laughinghouse, Greenville Dr. E. T. Dickinson, Wilson Dr. W. L. Dunn, Asheville
Committee on Legislation	Dr. K. P. B. Bonner, Raleigh Dr. J. M. Parrott, Kinston Dr. H. A. Royster, Raleigh (resigned)

Committee on Scientific Work	Dr. E. J. Wood, Wilmington Dr. Wm. deB. MacNider, Chapel Hill Dr. C. A. Shore, Raleigh
Committee on Finance	Dr. J. T. Burrus, High Point Dr. J. B. Wright, Raleigh Dr. A. DeK. Parrott, Kinston
Delegates South Carolina Medical Society	Dr. J. S. Brown, Hendersonville Dr. T. C. Quickel, Gastonia Dr. R. L. Payne, Monroe Dr. W. D. James, Hamlet Dr. J. O. McClelland, Maxton
Delegates Virginia Medical Society	Dr. B. C. Willis, Rocky Mount Dr. S. N. Harrell, Tarboro Dr. E. P. Gray, Winston-Salem Dr. J. W. Tankersley, Greensboro Dr. B. C. Nalle, Charlotte
Delegates American Medical Ass'n	Dr. K. P. B. Bonner, Raleigh (1922-23) Dr. J. F. Highsmith, Fayetteville (1921-22)

On invitation Asheville was selected as the next place of meeting Time: Third Tuesday in April.

Chairman Committee of Arrangements: Dr. E. B. Glenn, Asheville

Respectfully submitted,

J. L. Spruill, First District,
G. G. Dixon, Second District,
(Served for Dr. Rodman)
J. G. Murphy, Third District,
B. H. Hackney, Fourth District,
N. A. Thompson, Fifth District,
J. R. Parker, Sixth District,
I. W. Faison, Seventh District,
J. T. Taylor, Eighth District,
C. M. Van Poole, Ninth District,
Guy E. Dixon, Tenth District,

Nominating Committee.

On motion the report of the Nominating Committee was unanimously adopted.

Dr. J. M. Manning arose to make the report for the Committee on Drug Addiction. All present rose to their feet and gave Dr. Manning a great ovation as an indication of their confidence in and appreciation of him, personally and professionally, and also their appreciation of his fighting through the courts an indictment brought against him for

the purported illegal prescribing of narcotics. The entire profession and a large majority of the people of the State felt that this indictment brought against Dr. Manning was a disgrace to the United States government. Apparently the United States Court took the same view of it, as Dr. Manning was found not guilty and the judge presiding, the Honorable H. G. Connor, administered a stinging rebuke to the officers. Dr. Manning was overcome by these expressions of confidence. The following report for the Committee was presented by Dr. Manning:

Resolved First, that the Medical Society of the State of North Carolina now in session in Winston-Salem, approve House Resolution 258 providing for a select committee of fifteen to inquire into the subject of narcotic addiction in the United States. The personnel of this committee to include all doctors who are now members of the House of Representatives.

Resolved Second, that this Society endorses the position taken by Honorable Lester D. Volk, the propounder of Resolution 258, which positon he has so ably and admirably sustained in a speech delivered in the House of Representatives on January 13, 1922.

Resolved Third, that a copy of these resolutions be sent to the Senators and Representatives of North Carolina in Congress and that they be requested to use their best efforts to bring about the adoption of the resolution presented by Honorable Lester D. Volk.

F. M. Hanes, *Chairman.*
L. E. Bisch.
J. M. Manning.

On motion the report was unanimously adopted.

Dr. Cyrus Thompson presented the following resolution:

Resolved that the Medical Society of the State of North Carolina heartily thank Dr. I. H. Manning for bringing the matter of North Carolina's need of a medical college to our attention, and that we heartily endorse every movement looking toward the consummation of this end and that we urge the serious consideration of this matter by the Board of Trustees of the University of North Carolina.

On motion the resolution was unanimously adopted.

It was moved that the motion made at yesterday's session of the House of Delegates in regard to the use of funds turned over to a special committee by the former Board of Medical Examiners be reconsidered. This motion was unanimously carried. The President then put the motion and it was unanimously defeated. Drs. M. L. Stevens and J. M. Parrott for the committee then presented the following report:

We recommend:

First, That the unused part of the money received as fees by the former Medical Examining Board, with the care and disposition of which we have been entrusted, be transferred to the custody of the Treasurer of the present Medical Examining Board, to be used by said

Board or their successors, as the need for same arises, and in accordance with the decision of the Attorney General.

Second, That Dr. H. A. Royster, the Custodian of this fund, be authorized to effect its legal transfer to the Treasurer of the Medical Examining Board.

Third, That the committee be discharged.

On motion the report was unanimously adopted.

Dr. J. M. Parrott presented report for the committee on the President's message to the House of Delegates as follows:

We, your committee appointed to consider the message of the President of the Society, beg leave to submit the following report; considering the recommendations seriatim:

1st—Adopted. The committee feels that this recommendation should be emphasized, and it is of the opinion that the number of invited guests should not exceed two under ordinary circumstances, and never more than three, invitation to be extended by the President at his discretion.

2nd—Adopted.

3rd—The committee does not think that this is a matter which should be made permanent, and further it has already been considered and acted on during a session of the House.

4th—Adopted.

5th—Adopted.

6th—We are of the opinion, and so advise that a committee of three be appointed by the President from the House of Delegates to act in conjunction with representatives of the State Board of Health, with full authority and power to act, as in their judgment may be deemed best and wise, and if, after consultation with the State Board of Health, the committee thinks this recommendation should be adopted, they are hereby empowered and instructed to attempt to secure the necessary changes in the law in whatever manner they deem best.

7th—This is considered in conjunction with the 8th.

8th—With the proviso and recommendation that three members of the Society be appointed by the President to act in conjunction with the present President and Secretary-Treasurer of the Society to form a committee with full power to act, as in their judgment they deem wise, and in the event that it should appear in the opinion of the committee to be best to raise the annual dues to $5.00, or to continue the present dues and charge not more than $2.00 annually for the journal, they be empowered to do so; that the journal shall also be open to the North Carolina Public Health Association for the publication of its papers, and such matters of interest to it as may be orderly presented.

In the event the Society does not approve recommendation eight it is advised that the North Carolina Public Health Association be re-

quested to pay its proportion of the cost of the publication of our annual transactions, or such part of the proportionate cost as it may be financially able to do.

Respectfully submitted,

JAMES M. PARROTT, *Chairman*,
E. J. WOOD,
M. R. ADAMS,
Committee.

The President asked the Secretary to preside and the report of the committee was taken up seriatim:

1st—On motion unanimously adopted.
2nd—On motion unanimously adopted.
3rd—On motion unanimously adopted.
4th—On motion unanimously adopted.
5th—On motion unanimously adopted.
6th—On motion unanimously adopted.

After spirited discussion Dr. J. Howell Way offered the following as a substitute for sections seven and eight:

7. Resolved that it is the sense of the House of Delegates of the Medical Society of the State of North Carolina that the State Board of Medical Examiners, the State Board of Health, N. C. Public Health Association, and the State Hospital Association, if the latter should desire to print its transactions in the annual volume of the Society, be required to pay the actual expenses incurred for the space each may occupy.

8. That the President appoint a committee to consider the advisability of establishing a state medical journal; this committee to submit a report to the next annual session, showing advantages and disadvantages over present plan of issuing an annual volume. Said report also to exhibit detailed estimates of cost, with statement of Society's existent and probable sources of future income.

On motion the substitute was unanimously adopted. A motion was then made to adopt the report as a whole, which being put was unanimously carried.

The following committee was appointed by the President to consider the establishment of a state journal: Dr. H. A. Royster, Dr. J. Q. Myers, Dr. J. F. Highsmith.

Dr. John W. Long, Chairman of the Finance Committee, presented the report of the Finance Committee, which is printed following the report of the Secretary-Treasurer.

The House of Delegates did not recommend a place of meeting for the next year. Dr. Eugene B. Glenn extended an invitation to meet in Asheville. Dr. A. McN. Blair extended an invitation to meet

in Pinehurst. On a vote Asheville was selected by twenty to seventeen. On motion of Dr. J. M. Parrott the invitation to meet in Asheville was unanimously accepted. Time: Third Tuesday in April—17th, 18th and 19th.

Dr. Eugene B. Glenn was elected Chairman of the Committee on Arrangements.

No further business appearing, on motion the House of Delegates adjourned.

SECOND ANNUAL SESSION OF THE ASSOCIATION OF COUNTY SECRETARIES

Tuesday, April 25, 7:30 P. M.
Orangerie Room, Robt. E. Lee Hotel

Dr. Moir S. Martin, President
Dr. L. B. McBrayer, Secretary

The Association of County Secretaries held its annual meeting at a dinner on Tuesday evening, with President Martin in the chair. The officers of the Medical Society of the State of North Carolina and the State Board of Health were invited to join us at dinner. Dr. Frank Billings of the American Medical Association was the guest of honor. He spoke at length on the organization and work of the American Medical Association and was greatly enjoyed by all.

At the close of the session Dr. W. E. Coltrane was elected President and Dr. L. B. McBrayer Secretary.

CONJOINT SESSION OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA AND THE NORTH CAROLINA STATE BOARD OF HEALTH

DR. J. H. WAY, PRESIDENT OF THE STATE BOARD OF HEALTH, PRESIDING

ANNUAL REPORT OF THE SECRETARY OF THE NORTH CAROLINA STATE BOARD OF HEALTH

W. S. RANKIN, SECRETARY, RALEIGH

INTRODUCTION

Mr. President and Gentlemen:

The people of North Carolina assume that the State Board of Health may make mistakes. They assume also that this Society is in a better position to recognize and correct the mistakes of the Board of Health than any other group of our citizens. They have required, therefore, that the Board report to you every year what it is doing and what it proposes to do. If the Board, because of the large scope of its activities, cannot make a complete report of work in progress and prospect the people expect you to interrogate freely the Board on any phase of its work, and they require this Board to answer your questions without reservation or resentment. Hence, our presence.

Just now the medical profession is interested more in the tendencies of public health work than in its history or present status. The profession is interested more in direction and rate of movement than in present latitude and longitude. The Board in this report will attempt to indicate to you clearly what it conceives its objective to be, how that objective is related to you, and how it proposes to achieve it

OUR OBJECTIVE

There exists a vast surplusage of untreated disease and impairment, a potential field which needs and awaits the application of medical science and which is not less than twice as great, very probably five times as great, as the field now cared for by the medical profession. To break down the barriers of ignorance and poverty, and to assist in so organizing the forces of medicine that they may extend their services to the large surplusage of untreated disease and impairment—that is the first and present objective of public health. We little realize the size of the problem of uncared for ills until we consider the problem analytically.

In North Carolina there were 87,436 births last year. Of these births 56,782, or 64.9 per cent, were attended by physicians, and 30,674, or 35.1 per cent, were attended by midwives. Of the 56,782 mothers attended by physicians there was a large per cent who were never seen during their pregnancy, and another large per cent who received most inadequate care during their puerperal state. Add to those attended by midwives those receiving inadequate attention during pregnancy and add again those who received inadequate attention

during their puerperal state and you have a proportion of maternity receiving inadequate medical care twice, probably five times, as great as the proportion of maternity that receives adequate attention.

From maternity we pass to infancy. Now, infancy is a state of being that is normal but neither strong nor safe, as indicated by the fact that one-sixth of all deaths occur in the first year of life and one-third of all deaths in the first five years. Infancy is such a state of being as to call for professional supervision and care both for the sick and the well; furthermore the practice of pediatrics, as you know, is in proportion to the intelligence of the community and the practitioner's clientele, extending its sphere of usefulness from the three to five per cent of obviously sick babies to the entire baby population. Here again, when one considers the unoccupied field of pediatrics and compares it to the amount of medical care rendered to infancy, it is clear that the unoccupied field of medicine is from two to five times as large as that at present under cultivation.

From infancy we pass to childhood, to that age group where the communicable diseases—measles, whooping cough, scarlet fever, diphtheria, meningitis, and the early manifestations of tuberculosis—play the leading role in the tragedies of life, and, then, go with the children to the schools. Here in North Carolina are 850,000 public school children, twenty per cent of the total number, 170,000, with visual defects needing correction; here are 40,000 public school children, five per cent of the group, with diseased tonsils and adenoids which ought to come out; here are 600,000 children, eighty per cent of the public school children with bad mouths, laying the foundation for subsequent digestive disturbances, rheumatism, and cardio-vascular diseases. Now add up your total—the mild, apparently safe, cases of contagious diseases, particularly measles and whooping cough, that were not seen but that should have been seen by physicians, the severer cases and the more dangerous infections that were not seen soon enough or often enough by the physician, the complications and the sequelæ, many with life-long effects that occurred because of inadequate medical service, and to this add all the physical handicaps to educational progress—and how great is the potential field of medicine as compared with its actual field of operation.

And now we pass to adolescence, to the age of puberty—that critical time in life when the sex impulse awakens, when individuality emerges, when family restrictions are strained and broken, when the individual wanders in the wilderness, when character is plastic and unsettled, when the great red plague awaits its prey. Here in North Carolina there are 50,000 new cases of gonorrhea, syphilis and chancroid each year—more venereal diseases than all the other acute communicable diseases combined. Only one-sixth of these diseases are reported. Perhaps not more than one-third of the cases are seen during their early and curable stages by physicians. Taking this problem in its bulk, it does not receive one-half, perhaps one-fifth, the treatment that it needs.

And now hurriedly we pass on to adult life—those beyond twenty—and here rest our major proposition as to the relative sizes of the

occupied and unoccupied fields of medicine on the evidence of one unimpeachable witness, to wit, the Life Extension Institute. The Life Extension Institute in the last ten years has gone into various industries located in various sections of the country and varying in character from universities and banks to mills and mines, and employing from a few hundred to several thousand employees, and has examined, without any selective process, all officers and employees from the president down to the humblest worker. The Institute has found fifty-nine per cent of the more than 250,000 persons examined in need of medical attention at the time of examination, and of those needing attention only one-fifth were under the care of physicians. The evidence, then, of the Institute is that the potential field of medicine among adults compares with the occupied field as four to one.

Surely the fields are white unto the harvest, but the laborers are few. And mark you, I have so far considered only the first objective of public health.

When, if that time ever arrives, we shall have provided adequately for the lame, the halt, and the blind, the diseased and impaired, then we shall be ready, retaining the work of making the unfit fit, to enter that larger and future domain of medicine where the fit shall be made fitter. I can touch here but lightly on this future and larger objective, but already its signs are discernible. Denistry has become an art that concerns itself mainly with preserving the teeth and keeping them beautiful and symmetrical. Pediatrics, in many centers, already is giving more time to the well baby population than to the sick. The Life Extension Institute is blazing the trail which the profession will follow in extending their services from the incapacitated to the impaired and from the impaired to the well. When we contemplate that time, not so far off, when our profession shall have achieved its first objective, shall have adequately provided for the diseased, and shall have begun to concentrate its thought and energies upon the new and larger field of making the strong stronger, we catch something of the feeling, something of the inspiration of St. John in Patmos: "And I saw a new heaven and a new earth: for the first heaven and the first earth were passed away; and there was no more sea. And I, John, saw the holy city, new Jerusalem, coming down from God out of heaven, prepared as a bride adorned for her husband. And I heard a great voice out of heaven, saying, Behold, the Tabernacle of God is with men, and he will dwell with them, and be their God. And God shall wipe away all tears from their eyes; and there shall be no more death, neither sorrow, nor crying, neither shall there be any more pain; for the former things are passed away. And he that sat upon the throne said, Behold, I make all things new."

THE ONLY WAY

There is one way, one only way to the attainment of this objective of public health, and that is through a more thorough application of medical science to the physical needs of the race. This means that the use of physicians in maternity must be continuously extended until

all births are attended by physicians and every case of obstetrics has adequate medical care not only at the time of delivery but throughout pregnancy and the puerperal period; this means a more complete and prompter use of physicians in the acute illnesses of infancy and for the well baby population, the addition to maternal care of a reasonable amount of professional oversight; this means the prompt use of physicians in all cases of acute infectious diseases, not only for the treatment of the immediate disease symptom or condition, but for prescribing and encouraging such care of the child, whether its symptoms be severe or mild, as will lessen the frequency of complications and sequelæ; this means that the common defects of school children must be made uncommon defects and the physical retardation of educational progress removed; this means that all cases of venereal disease must be brought promptly under the care of physicians and kept there until the cases are no longer infectious and dangerous to the public; this means that seventy-five or eighty per cent of adults who need medical supervision and treatment must be brought under the care of the medical profession. In short, the attainment of the objective of public health, to wit, the removal of the surplusage of disease and impairment and the promotion of the health of the average citizen, means and can mean but one thing—a tremendous enlargement of the field of medical practice.

HOW THE FIELD OF PROFESSIONAL USEFULNESS MAY BE ENLARGED

To make the application of medical science more commensurate with public needs two conditions must be fulfilled: (1) a greater demand for medical science must be developed; and (2) the medical profession must be organized, not only, as at present, for scientific discussions, but for organized effort, real team work, in dealing with the problems of both private practice and public health.

INCREASING THE DEMAND FOR MEDICAL SCIENCE

A greater demand for medical science must be brought about through a more extensive and thorough understanding by the public of its needs and value. The larger public knowledge of medical science is to be achieved through educational work. The intelligent appreciation of health and its hazards, a more complete realization of the use of medical science in safeguarding health, in anticipating, preventing, and postponing disease and impairment is in proportion to the intelligence of a population. Intelligence uses, appreciates and pays for medical science, but ignorance neither uses, appreciates nor pays.

To do the educational work which will be necessary to make the public demand for medical science commensurate with the need there are two essential agencies: (1) the official health agency, including both central and local boards of health; and (2) the county medical society.

The State health agency and the local county health department should endeavor to reach every nook and corner of the State and county and, in so far as they may, every citizen with information that will lead to a higher ideal of physical living, a keener appreciation of health and its hazards, and a more general use of medical science. Through bulletin, special letter, correspondence courses, general correspondence, press, and platform the official agencies should endeavor to carry the gospel to every creature.

But official effort, no matter how vigorous, will fall far short of the needs and possibilities of making the people understand and appreciate, to the extent that they should, the value of medical science. The Methodists and Baptists of North Carolina, through their State papers —*The Christian Advocate* and *The Biblical Recorder*—through their evangelists, visiting elders, itinerant representatives and elaborate correspondence could develop a limited understanding of the principles of their denomination, but these activities, carried on from Raleigh and increased many fold over what they now are, would never influence to the point of determining the conduct of the tens of thousands of people who are active in these religious organizations. We must not forget that there is a very large percentage of people who do not read and many more who read but do not understand—a group of people who get their information only *viva voce*, and whose channels of influence are limited to personal contacts. As their spiritual salvation so their physical salvation must be conveyed to them by their local minister, the one of the soul and the other of the body.

The local medical society is as essential and important a part of any plan of physical salvation as is the local ministerial association a necessary and important part of any plan of spiritual salvation; moreover, the local medical society must learn from their spiritually minded brethren that while pastoral work, home visits, and individual case work is necessary, it is not all, that work with the people collectively prepares for and makes possible the pastoral or individual case work. Organized medicine must deal collectively with the public. Unorganized medicine cannot deal with the public. Let some individual member of a county medical society try it and begin to meet the people collectively. He is misunderstood no matter how praiseworthy his motive. He will not give many addresses before his brethren begin to whisper among themselves that he is an advertiser. The individual physician, under present conditions, is debarred from dealing with the local public in a collective way, but the organized society can do it and should do it without further delay.

Such a task for a county medical society is both practical and easy. On the one hand it places no heavy burden on the individual physician while on the other hand it does contribute an enormous service to the public in improved efficiency and happiness, and to the profession, if not in other ways, in an increased income. It pays its way, and to my mind, this aspect of the field of organized medicine is the thing that makes it practical and insures its future.

A concrete example will make some of the possibilities of organized effort clearer. Let us take a county of 500 square miles, 25 x 20 miles.

The county seat is near the center of the county, and the population is approximately 30,000. There are twenty-four active practitioners in the county. Each one of these doctors agrees to speak or to read an address or a paper which the county medical society secures through himself or through someone else and which the society has censored, approved and adopted as its own statement. Now note that the address is not that of the doctor who gives it or reads it, but is the address of the society. The physician agrees to give this address or read the paper at twelve points in the county during the year, filling one appointment during each month. A committee of the medical society working with the local Red Cross Chapter or the county welfare officer, or both, arrange for the audience. Not less than two physicians address each audience. Two physicians and two subjects draw a larger group of people than one speaker and one subject. This is a reasonable and needed public service from the individual doctor which is made possible with the county medical society normally sensitive to public as well as private needs.

Such a program would provide twenty-four public addresses each month or 288 public addresses during the year. Such a program with an average audience of only 100 persons would reach 28,800 people or ninety-five per cent of the total population of the county during the year. Such a program would embrace such subjects as (1) Physical Condition of People Generally; (2) Importance of Periodic Physical Examinations; (3) What People Should Know About Infections; (4) Value of Vaccines and Antitoxins; (5) What People Should Know About Tuberculosis; (6) What People Should Know About Cancer; (7) Sex Hygiene (for men); (8) Venereal Diseases (for men); (9) Sex Hygiene (for women); (10) Venereal Diseases (for women); (11) Maternity; (12) Care of the Baby; (13) Surgical Conditions of the Abdomen, "Indigestion and Liver Complaint"; (14) Constipation; (15) Focal Infection; (16) Headaches; (17) Heart and Arterial Diseases; (18) Kidney Diseases; (19) Principles of Nutrition; (20) Pellagra and Diabetes; (21) Relation of Teeth to Health; (22) Relation of Nose and Throat to Health; (23) Relation of Eyes to Health; (24) The Quacks and Sects; and (25) Patent Medicines. A list of subjects like the above would include ninety per cent of the information which the public needs. Such a program within a year or so will increase twenty to forty per cent public appreciation of medical science and the use of those who dispense it. It will improve the earning capacity of the people of the county to the extent of hundreds of thousands of dollars, and will increase the income of the profession by thousands of dollars. In short, it pays both parties, the public and the profession, in terms of the higher satisfactions of life and in cold hard cash. Such a program will be more effective in one year than all the educational work of the State and local health departments in five years. Such a program affords the only way, and a very effective way, for dealing with chiropractic.

"Ye shall know the truth and the truth shall make you free." But the knowledge of truth which frees from disease and quacks must come through the preacher, the preacher of physical salvation in the here and the now.

ANSWERING THE INCREASED DEMAND WITH BETTER SUPPLY

The question of supplying the medical services for the now increased demand on the part of the public presents itself. The greater demand for medical science having been brought about by more effective medical organization, the greater supply must be provided likewise through carefully planned organized effort. Now in dealing with this matter of greater demand for medical services it is well, for the sake of a clearer understanding, to consider it from two points of view.

First, the collective educational work of the county medical society will have created a wide-spread interest on the part of individuals to know themselves physically—whether or not they are suffering from some incipient disease or some physical impairment that conditions their present or future usefulness. In short, there will be a large demand for physical examinations. To answer this demand a county medical society could organize a county diagnostic clinic where either any person would be admitted unconditionally for advice, not treatment, or where persons applying for examination would be admitted conditionally, the conditions of admission being determined by the society who are operating and running the clinic. It would seem that if the demand for examination is not too great any person, not at the time of their application for examination under the care of a physician, should be admitted for examination and advice, for, let us keep in mind the fact that the diagnostic clinic is but the extension of the collective educational work of the local society to the individual. This educational work in public meetings and with individuals in the clinic will inevitably uncover to the recognition of both profession and people the great surplusage of disease and the need for treatment that we dealt with in the first part of this report.

And right here, with this reference to treatment, we come to the second point of view of the public demand—namely, a demand for treatment which shall be more adequate for the existing surplusage of disease. We realize that in dealing with this question of the treatment we are touching the quick, but this phase of the problem exists, and there is no use in playing the ostrich. There is no reason why we should hesitate to approach the problem of treatment. It should be dealt with, having due regard for the interest of both the public and the profession, and it can be dealt with beyond the question of a doubt in such a manner as to advance the interest of both parties, public and profession. The character of treatment is purely a scientific problem, a problem lying entirely within the domain of the profession, but the provision for treatment is largely an economic problem that resolves itself into a matter of administration.

In attempting to handle the economic phase of the problem of treatment, we shall do well to attempt to provide for shifting ambulatory charity treatment from the shoulders of the twenty or twenty-five doctors in the average county, where it now rests heavily, to the shoulders of those who should bear it, namely, to the general public. From twenty to thirty per cent, perhaps, of practice is charity work, and charity practice is good for neither recipient nor administrator. It is a makeshift at best. Funds can be provided to maintain the clinic and the maintenance of the clinic should include, among other things, reasonable pay for the physicians in attendance—payment of physicians being made on the basis of so much per hour service rather than case treated, thereby avoiding establishing two classes of practice fees in the county.

With the educational program heretofore described the local Red Cross Chapter, working with the local health department and the local county welfare officer, could bring together a group of individuals who could undertake the business problem, the financial problem of the clinic. The following sources of revenue could be considered: (1) a nominal charge for admission to the clinic; (2) Red Cross Chapter funds; (3) Christmas Seal funds; (4) contributions from individual citizens of the county; (5) appropriations by the town or city board of health; and (6) appropriations by the county commissioners. The financing of the clinic the first year would be, relatively speaking, the only difficult period for the business management. After that, when the board of directors, or business management, could account to the people, especially through the educational channels already referred to, for the amount of money expended and the results obtained, the clinic should become a growing concern.

The next question that would have to be settled would be who should be entitled to the advantages of the clinic which has now been provided by the general public. Indiscriminate admission for treatment is out of the question—it would either destroy the efficiency of the local profession or require a budget which the people of the county could not provide. The admission to the clinic, then, would be conditioned upon the economic status of the applicant for treatment. The conditions for admission are matters for the local county medical society to work out, perhaps with the assistance of those who are interested in developing the business side of the clinic, particularly the local Red Cross Chapter.

Finally, when the people of the county have been informed, organized, not temporarily by traveling evangelists from the State Board of Health, but permanently through and around their own local county medical society, when they have been made to see the great unsupplied need for medical services, when they have had demonstrated to them what a public clinic can do, when they come to understand that the public clinic is but the halfway station between unorganized private practice and a county hospital, when they recognize that provision must be made not only for the ambulatory cases of the clinic but for surgical emergencies and the more serious cases of illness, then through a process of education and evolution, the county public hospital will

come into existence. But remember this, if you forget everything else that has been said, that public organization to care for disease and impairment in an adequate way will follow and never precede professional organization. We shall have organization and co-operation without when we get co-operation and organization within.

DISCUSSION

Dr. J. Howell Way, President State Board of Health: The annual report of the secretary of the State Board of Health is now before you, with suggestions for future improvement and development. That report is very important. Any suggestion or criticism, constructive especially, or otherwise, you desire to make is for your action. It is open for discussion.

Dr. S. T. Nicholson, Washington: Mr. President and Gentlemen of the Conjoint Session of the State Society and State Board of Health:

I am surprised at the seeming lethargy of this Convention in not promptly endorsing so fine a report as Dr. Rankin has made. The report is splendid, intelligent, accurate and absolutely complete. It is hard to understand how any intelligent man can fail to recognize that the pendulum is swinging from Liberty to Progress.

Fifty years ago a boy could get up and quote, "Give me liberty or give me death," and a loud applause would follow, but today such a quotation would fall flat. But if he would get up today and say, "give me progress or give me death," the applause would be loud and long.

Dr. Rankin's report is all that it should be, and it should be heartily endorsed promptly by every doctor. He bases it on the Scripture. Feeling the heavy weight of responsibility and seeing the vast, outstretched fields of glorious opportunities for us all, it is with pleasure and a feeling of deep humility that I address you today on a subject of the greatest importance and one which should be of vital interest to every doctor.

We have made wonderful strides in material matters to the inestimable advantage of humanity, in the discoveries of antitoxins and other great remedies of many ills, together with a very great advance in surgery, but the disturbing question with me today is—ARE WE KEEPING PACE WITH OUR SPIRITUAL LIFE? Do we fully recognize the fact that all things whatsoever are dependent upon faith in God through the Resurrection? Do we realize that to walk with God and talk with God and commune with Him in our own hearts furnishes us with an all sufficient strength and comfort to combat every ill of ourselves and our fellow man?

Do we appreciate the fact that a doctor is shorn of over half of his efficiency without Christ?

The Devil is ever active and his most active field seems to be the field of the doctor; he places before him always one temptation or another, hence, it behooves us not to be less active in business but more fervent in spirit, through prayer and fasting keep ever in touch with God, reflecting the light of Christ upon the world.

We are surely cognizant of the fact that our constituency believe in us and what we say goes further with the average of them than the words of any other set of men in the world.

Now, we have in this State around two thousand doctors. Suppose we should all exert ourselves to promote their spiritual as well as physical welfare—WHAT A BLESSING TO THEM! WHAT AN INFLUENCE FOR GOD! AND WHAT POWER WOULD BE ADDED UNTO US! "Cast your bread upon the waters and it shall return after many days."

A short time ago a man brought his daughter to my office for treatment and said, "Doctor, do you remember going to my father's house in 1881?" I replied I did not. He said, "We lived down in the pocosin, twenty miles from Washington and three miles from any neighbor. You came in and said it seemed to you that it had been ten miles since you passed a house, and seeing my father and mother in one bed and we three children in the other you asked who waited on us; my father said 'the one that was best off, first one and then the other,' you replied that you thought it was a place where the Lord was needed and got down on your knees and prayed the best prayer we ever heard and that prayer has had such an extended influence for good in our home it is for that reason I have brought my daughter to you for treatment today."

Mr. President and gentlemen, I do not wish to consume any more of your valuable time and I thank you most profoundly for your kind indulgence.

In conclusion, however, I would like to impress these facts:

"Except ye be born again you can not enter the Kingdom of Heaven."

"As a tree falls, so shall it lie."

"There is no chance after Death, so do not be afraid but for Christ's sake be courageous and speak out, consider what He endured and throw aside every weight and the sin that doth so easily beset you and run with patience the race that is set before you."

I close with the dying words of the great warrior who said, "What is my fading Empires and all this world compared to the Kingdom of Christ?"

Dr. F. R. Harris, Henderson: It seems to me it would be well to have portions of the secretary's address brought before the public before our transactions are published. I do not know whether it requires a motion but I make the suggestion that the public does not know of this, the people in the wild woods will never hear of that paper unless in some way we can get it before them, and it occurs to me as of vital importance that the public know that the State Board of Health is looking after their interest and trying to elevate and uplift the community, and of course the physical health is the basis, and then on to spiritual things.

Dr. J. A. Morris, Oxford: Dr. Rankin referred to the systems of organization in the Methodist and Baptist churches, and I am reminded of his standing as our bishop. We are going to invite the bishop to Granville County. We are going to ask the good bishop to come and give us that same talk in Granville County, and we shall have all the medical profession present.

Dr. Way, Chairman: I thank you, and on behalf of the good bishop I accept the invitation.

I would like to state that the bureau of publicity in the office of the board of health in Raleigh will doubtless from time to time in its periodical sending out of data to the press over the State give voice to the publication of such portions of this address as they deem fitted for public education.

Dr. Harris: I move that that address be referred to that Bureau with instruction that it be sent to the press for publication from time to time as they see fit.

Motion seconded and carried.

Dr. W. F. Hargrave, Kinston: We of Lenoir County are going ahead to do some work. Walking down the street here this morning, I see you are afflicted in Winston-Salem, as we are in Kinston, with great big chiropractic signs offering to cure everything under the sun. We propose to organize a clinic in Kinston, and are going to pledge ourselves for one of us to go to one schoolhouse on a certain day, and some one go with him, and they will make a talk to the people on a subject chosen by our society, and this schoolhouse will be our meeting ground; we will go to the community clubs, and to the social clubs to explain to the people what we as physicians can do. We are going to advertise ourselves, advertise what the *Lenoir County* profession can do, not what any individual can do; we are going to advertise what the medical profession can do, and let people come into the clinic. We do not know how it will work out as to fees of the clinic, but we are going to work as a county society, with our superintendent of health working with us. We will utilize our Red Cross and other concerns to raise the money, we doctors will give our services free of charge to the clinic. Who they are going to put on us to treat we do not know. Of course we will get stung some, and we will sting others by not giving good service, so I suppose it will even up. But we are going to endeavor to do what Dr. Rankin has suggested, let the people know what we can do, and try to do it.

Dr. M. H. Fletcher, Asheville: I do not know whether I am in a Methodist conference or a Baptist association or a medical society meeting. I want to plead guilty. In the past I have at times criticised the State Board of Health, just criticisms I hope, certainly meant to be fair and just on my part. Now that they come around to my point of view I want to advise everybody to get behind them, and if we all go back to the communities in which we live with this spirit we can

do a great deal. Let us go back and start where we ought to, in the local societies, in the townships, the city boards of health and in the county. Let us work with Dr. Rankin, who seems to go back to first principles. I want to get behind him and I want everybody here to do the same. We are with him.

Dr. W. H. Boone, Durham: I believe, as Dr. Fletcher does, we are getting in the right attitude, when we endeavor to get behind the State Board of Health.

I think, however, there is a possibility of our making a mistake, as suggested by the gentleman on my right. I feel that the organization of Lenoir County physicians would make a mistake, in that they propose to tell people what they can do, by organizing and distributing their information as do the osteopaths and the chiropractor. Whenever, in my opinion, the local organization of a county endeavors to organize itself to combat quackery of the kind that is advertised and so much patronized, then we are putting ourselves on the same level and the same plane, and we have a local condition and a local argument that will be hard for the people as a jury or as listeners to settle for themselves. But we do have a condition in this State that is deplorable. We have a condition in this State, and not only in this State but all over the country, in which there are more chiropractors being turned out upon the public than there are practicing medical men, a condition that has got to be met, and the question is, how is this condition to be met? The only answer is, an informed and intelligent people. And how is that information and intelligence to get to those people? Has it got to come through these local societies, through our county medical societies? In the city of Durham we have three advertising chiropractors and two osteopaths. The osteopaths are a little more conservative, and do not advertise so much, but the chiropractors are advertising in the local papers to the extent of a full sheet at one time. Are we as an organization of the Durham County Medical Society to endeavor to combat that fako-commercialism by papers censored by our society? I think it must come directly and altogether through a quiet teaching through periodicals and papers issued from the State Board at headquarters in the city of Raleigh, and I believe that is the only fundamental and primary way of getting intelligence to the people.

It is surprising to know how much can be imparted to what we might call the ignorant or illiterate class, when they get in their mail, letters of instructiveness. It is surprising to see how mothers study the literature sent out from Raleigh. It would be wonderful, the influence the proper amount and kind of literature would have, sent from Raleigh to the public, to the points and people indicated through the local societies contradicting and explaining the claims of parasitic fakers and commercial quacks.

Dr. Harris: I agree with the doctor, and I want to say, to do more instead of less sending out of literature from the State authorities at

Raleigh. There are a great many ignorant people in the State, many who cannot read, and we must come in personal contact with these.

Dr. Rankin's report is very carefully written. You cannot reach the man who cannot read and write, by sending him a letter, you must come in personal contact with him, and here is a medical society which proposes to do that—to send out men to talk to them. It seems to me the most feasible and practical plan I have heard. I am satisfied we can be of marked benefit, and improve the health of the State decidedly if we will carry out those plans. It is well to do as he says, but add this other to it.

Mr. Chairman and gentlemen, I want to say this, I do not know anything greater on this earth than a doctor who undertakes to do his duty, and I do not except the ministry. There is no man who has a grander mission than a doctor, as I conceive, because the health is absolutely fundamental. What can a man do if he cannot get out of his bed? How can he help anybody? So physical health is fundamental. In reading what Christ did on earth I have been wonderfully struck with the thought that his great work is practical. He makes the blind to see, the deaf to hear, the lame to walk, in other words helping their physical condition, and Mr. Chairman and gentlemen, He said, "Greater things than these shall you do."

Let us go ahead and improve the physical health of the citizens of North Carolina, and no man on earth can have a grander mission than that. If we will do that, we will improve their mental condition, and go on to higher things. Whether you believe in church or not, the fact is if you do your duty here and carry out the instructions suggested in that paper, you are doing the things Christ did, and I repeat, the promise is to you, "Ye shall do greater things than these" and I believe it is so.

Dr. Boone: I am proud of this progressive report from our progressive secretary. I think the great lesson we need to gather is that every man carry home to his county society that same progressive spirit, educate the people, ignore the quacks.

Dr. George H. Ross, Durham: I wish to say that the State Board of Health is doing a great work in sending literature to the expectant mothers of the State. They appreciate it, and read and study the letters. I advise the physicians to send in names early, sending also the date of expected confinement. The Board will furnish blanks for this.

In regard to the osteopaths and chiropractors, we are wasting time in discussing them—they are here to stay, for a great many people suffering with mental and nervous troubles will go to them and be relieved, solely from the psychic effect. I mean well informed, educated people.

Just a minute to reply to Dr. Thompson. I contend that they are educated. The professors from our State University come over to Durham for treatment. If these professors are not educated, pray tell me who are.

Dr. R. T. Ferguson, Charlotte: Just one thought. We, as the medical profession of this State, are responsible for the osteopaths and the chiropractors. The medical profession is responsible for these men coming in, because we have not done our duty. If we had cured these patients there would be no need for them to go to the chiropractors and the osteopaths. It behooves us to study more and cure these patients. If we cure a patient they never stop talking about it. We have the finest advertising medium in the world.

Dr. Cyrus Thompson, Jacksonville: Mr. President, I desire to say only one or two things. The psychology of a situation always interests me. In all the world I know nothing more peculiar than folks. I can appreciate the old Quaker who, looking at his wife, broke silence saying, "Everybody in the world, Priscilla, is queer except thee and me," then slowly adding, "And thou, Priscilla, art a little queer." Folks are strange things, differing as much, Montaigne said, from themselves as from one another.

Dr. Ross asks how you are going to educate these people. These people who run after the chiropractor are already, he says, the best educated people in their community, in general information and education standing head and shoulders above the rank and file. Is that true? I know that what he says may seem to be true, and yet I know that there is not a word of truth in it. These people read, of course, but swallow without question. They do not think, they do not reason; and the power and habit of reasoning and thinking is of the very essence of education.

I had a patient sometime ago who was dying of some central nervous degeneration. I took her to Westbrook and later brought her home to die in her own house among her family and friends. An old friend of hers, a woman whom I had known as a girl forty years ago, came to our town from Rochester, New York, her home, having gone north after her marriage. She came into a public room one afternoon and went to a 'phone near me and called up my dying friend's husband. This woman was the type of Dr. Ross's intelligent, well-informed, educated folks. She could read and swallow periodical and newspaper stuff without question. She implored this husband to send at once for a chiropractor, tearfully assuring him what a chiropractor could do. "Who is your physician?" she said. "He will object, I know; he'd rather your wife should die than be cured by a chiropractor; but who is he?" She was told that he was Dr. Cy Thompson. "I knew him," she said, "when he was a young man. He would not want her cured unless he cured her. Of course, he would object, but I know what I am talking about: take my advice and do it anyway." The husband was an educated man.

I sat there and listened at her bedeviling a distressed but reasoning soul until she said, "I would like to see Dr. Cy Thompson." Breaking silence then I said, "Madam, here I am, greatly enjoying all your conversation. It is a long time since we met, but you hold your own remarkably well." Finishing her silly importunity, she came over and said, "I want to shake hands with you. I know you thought I

was a fool, now didn't you?" "Madam," said I, "I must not lay bare to you my mental processes or conclusions." "But," she said, "I know you did, and you'd as well tell me." "If you insist," said I, "I do not mind telling you frankly: I did not think you were a fool—I knew you were one."

Oh, she was an educated woman, of course. The like of her never think: they read and believe; they take in confidence without question, swallowing like young birds enormous absurdities.

How are you going to overcome the folly of such like and the wiser wiles of the blatant chiropractor and his ilk? Not by fighting them; rather by ignoring them. The only active way of sensible attack is by quiet contrary propaganda—by putting sensible literature in the hands of the public. It is a slow process, to be sure, the process of sane popular education. It is line upon line and precept upon precept, here a little and there a little.

But if I were a chiropractor, I would spend all my substance but my barest living to get the medical profession to fight me. You all know me here and you have been wonderfully kind to me. I have many friends and I hope I am a likable fellow—so good a fellow that even my enemies do not greatly dislike me. But I never made much out of my friends: I capitalized my enemies always and made them my chief assets.

Dr. Boone said a wise word: "Ignore them." That is the profession's trump role.

But my friend over here said, "Cure them, so that they will not feel the need to run after every new cult and ism." That, my brethren, is biologically impossible. There are lots of people—and these are they who run after the chiropractor as they followed the osteopath until the osteopath, beginning to be rooted out by the new, began to turn to the regular profession—there are lots of people who would be absolutely unhappy and feel utterly wretched once they were well. Not even a chiropractor can satisfy these for long.

It takes all sorts of people to make up a world. Folks are queer things. We must take into account biological differences. We, of the regular profession, must go ahead, unafraid, and do our honest best work. The judgment of the world is in our favor. We know that multiflous liars are always necessary for the diversion and fleecing of fools. But why should we worry?

Dr. Rankin, closing the discussion: One suggestion of the report seems to have been taken more seriously than I expected. What we were proposing is that the local medical profession organize itself to increase the demand for medical service, and I mentioned 25 different subjects as illustrations or suggestions of what the doctors might talk about to the public. I happened to mention quacks. Quackery is a bigger thing than the chiropractor. It embodies the whole group of sects. I thoroughly agree with my friends who advocate not fighting chiropractors, but I disagree with those who advocate not fighting chiropractic. We cannot be personal, but we can fight the falsity of

certain doctrines. That recommendation is in strict accord with existing plans of the American Medical Association. The Association has authorized the preparation of a very comprehensive and clearly stated bulletin on this whole question of medical sects, and all I have stated is that such literature of the American Medical Association be used, along with other matters of even greater importance in enlightening the people. I did not advocate, of course, going out and having joint debates with chiropractors, or even mentioning the chiropractor, but rather the principle of quackery.

Dr. Way, Chairman: I desire to thank you very much for the consideration given Dr. Rankin's report, and the valuable comments and suggestions made thereon.

If there is nothing further on that line, I have a little memoranda I would like to submit to you for your approval.

The first is as follows:

"The Conjoint Session of the State Board of Health and the State Medical Society in regular annual session have noted with gratification the recent utterances of Governor Cameron Morrison advocating the more extended cultivation and use by the people of our State of native grown garden and farm products as most advantageous for both man and beast.

"We heartily commend his advice on this subject to our citizens as economically and physiologically sound. We also desire to emphasize at this time the manifest duty of every practicing physician in our State to persistently encourage his clientele in the greater use of milk and vegetables as very necessary articles of food in every properly balanced dietary."

I am going to ask you to adopt this as thanking our Governor, and also emphasizing the value and need of the greater use of milk and vegetables in the average diet.

Upon motion, duly seconded, the resolution was unanimously adopted.

Dr. Way, Chairman: I hold in my hand a paper which it gives me a great deal of personal as well as official pleasure to submit to you. It is purely of a personal character relating to a gentleman, a distinguished engineer, a man high in his profession, one who came on the State Board of Health years ago, and labored incessantly, faithfully and earnestly to promote its influence and its work. It is the following:

"The North Carolina State Board of Health in forty-fifth annual session convened desires to place on its records, as well as the records of the Medical Society of the State of North Carolina, its appreciation of his valued service, as well as its regret at the retirement from its membership of Col. J. L. Ludlow, C. E., of Winston-Salem, N. C.

"Coming on the Board in the year 1888 by appointment of His Excellency, Governor Alfred M. Scales, and serving by continued appointments since from Governors Fowle, Aycock, Kitchin and

Craig, Col. Ludlow has to his credit a period of service with this Board equalled in length by only a single gentleman, and surpassed by none in his due appreciation of the great and important responsibilities inherent in such membership, and his assiduity and intelligent zeal in discharging the same.

"Much of the constructive endeavors of the Board during his long service as engineer member bears the mark of his fertile brain, and the intimate details and manifold regulations pertaining to the many vital problems relating to questions of water, sewerage, etc., during the years of greatest development in Carolina's history exhibit the imprint of his thoughtful care and earnest consideration.

"We congratulate the people of the State on his fine service to them.

"We tender him our thanks for the great help he ever gave to his confreres in their important work, and remembering with affection his kindly spirit of good cheer, part with his wise counsel and his pleasing personality with genuine regret, and wish him great success in all his laudable undertakings."

I move the adoption of this resolution.

Dr. Thomas E. Anderson, Statesville: I heartily indorse this resolution, and desire to second it. Col. Ludlow, while occupying this high position, faithfully discharged his duty to his State and made an impress which will remain on his time and generation. While a member of the Board he endeared himself to all of us, both by his cordial manners and by his outspoken manly opinions on all matters falling under his department.

I most heartily indorse the resolutions, and move their adoption.

Motion unanimously carried.

Dr. Cyrus Thompson, Jacksonville: I wish to call up one matter before the conjoint session. Those of you who were at Pinehurst a few years ago will remember the incident of the good friend of ours from Carteret, and the sleepy town of Beaufort, who lost his overcoat, containing his commercial teeth in the pocket. I made the announcement, you remember, at his request, because he had to leave before the session was closed, and I tried to get his teeth and his coat back. The last time I saw him he told me his wife had gotten him another overcoat, but he never did recover his coat or his teeth.

I was inquiring of Dr. Royal about this good friend, a fine old man. I believe he was health officer in the County of Carteret. I was told that the poor old fellow is dying of cancer of the stomach, and has but a little while longer to live. It grieved me, because he was a genial spirit. He loved this society, and everybody who knew him loved him. It is the last word we can ever say to him, and he never can say a word again to us. He is falling under that last inevitable obscuration.

I move that this Society say to him by wire, through our secretary, that we are thinking of him and that we send him our tenderest memories and condolence.

Motion seconded and unanimously carried.

BOARD OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA 1920—1926

Standing, Left to Right: L. A. Crowell, M. D.; C. A. Shore, M. D.; J. S. Murphy, M. D.
Seated, Left to Right: W. M. Jones, M. D.; L. N. Glenn, M. D.; W. P. Holt, M. D.; K. P. B. Bonner, M. D.

Dr. Way: The motion is carried. The secretary will send the proper message.

Upon motion, the conjoint session adjourned.

Winston-Salem, N. C.
April 26, 1922.

"Dr. P. B. Loftin,
Morehead City, N. C.,

I am directed by the conjoint session to say that it misses your genial presence and holds you in affectionate memory.

W. S. Rankin."

Beaufort, North Carolina,
April 27, 1922.

Dr. H. A. Royster,
Winston-Salem, N. C.

My Dear Dr. Royster: We wish to express to you and to the members of the Society our deep appreciation of the kind words and thought in your message to papa. I am sending his message as quoted: "To the President and members of the State Medical Society:

It seems the coat has been retreating
And the teeth have done no eating;
But I assure you there'll be no moaning
When this frail barque shall cross the bar;
For in preventative medicine
There is a bright and shining star!

Fraternally and lovingly yours,
P. B. Loftin."

Again thanking you, I am,

Cordially yours,
(Miss) Emily Loftin.

PHYSICIAN DIES AT HIS HOME IN BEAUFORT

Beaufort, May 10.—Dr. Preston B. Loftin, a highly esteemed citizen of Beaufort, died here at 1:30 this morning after a severe illness of several months. Cancer was the cause of death. Dr. Loftin was a native of Wayne County, but had lived here a number of years. His widow and daughter survive him. As a member of county examining board during the war Dr. Loftin did excellent work for his country. He was a useful and progressive citizen.

REPORT

OF THE

BOARD OF MEDICAL EXAMINERS
OF THE STATE OF NORTH CAROLINA

TO THE

MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

This second annual report of the eleventh Board of Medical Examiners contains announcements in connection with its activities that will probably interest the medical profession. Some of the activities are distinct departures from established customs, and while the Examiners are respectful of precedent, the exigency of the times made these steps necessary. There are three outstanding features of the work of the Board during the past year.

1.—The repeal of the law permitting the granting of temporary licenses by the regular session of the General Assembly of 1921 necessitated an extra session of the Board to accommodate applicants for endorsement of credentials. Accordingly the Board held a session in Greensboro in December and eighteen applicants received licenses. This is the first winter session in the history of medical licensure, and it is the first time in twenty-five years that the Board of Medical Examiners has held two sessions in a given year.

2.—In the taking over of the records and other effects, it was early apparent that it was imperative that a new system should be installed and the manner of conducting the work in general should be revised. The old register of licentiates carried too meagre data as to those licensed, was full to overflowing with names, and carried the index, arranged very disorderly, in the back part of the register. The rules and regulations governing applicants for license by examination and endorsement were badly in need of revision; this by reason that these rules were distributed in printed form for the information of prospective applicants and should be clearly stated. The installation of a card index of the individual grades made by applicants was needed on account of the majority of State Examining Boards requiring the certification of the grades of applicants for license without examination. Finally a change was indicated in the form of the endorsement blanks. Accordingly the following changes were made in connection with the conduct of the work:

a.—A new register of licentiates has been installed, incorporating ample data in connection with each licentiate. The names contained in the old register were transcribed into the new record book and ample space allowed to provide for future needs for a hundred years to come. The names are indexed in strict alphabetical order and so

distributed as to provide for the entry of future names and still preserve the same alphabetical order. The old register has been deposited with the State Historical Commission, where it will be jealously guarded and prized for its real worth.

b.—The rules and regulations governing applicants for license have been entirely revised and issued in more attractive form. Thus we hope to reduce to a minimum the large volume of correspondence that has heretofore been coming into the office.

c.—A card index system of the individual grades of all licentiates since 1914 has been installed, arranged alphabetically without regard to year. Unfortunately the grades were not available prior to this period.

d.—The Federation of State Medical Boards of the United States during the past year submitted a uniform endorsement blank to the various Boards and recommended its adoption. The underlying motive was most laudable, in that the real purpose was to place endorsement, as between States, on a uniform basis. To North Carolina belongs the distinction of being the first State in the Union to adopt it. Since that time, ten or fifteen States have followed suit and there is no question but what this blank will be generally adopted within a few years. This uniform blank differed in very few minor details with the one then in use by our Board, and the few differences greatly improved the utility of our blank.

3.—The third feature of the activities of the Board is a direct outgrowth of the act amending the Medical Practice Act that was ratified in the special session of the General Assembly in December, 1921. We refer to section ten of that act in which provision was made that the Clerk of Superior Court in each county of the State should furnish a certified list of all physicians registered to practice medicine and surgery in his county from February 28, 1889 to January 1, 1922, whether registered on license from the Board of Medical Examiners, presentation of diploma from a medical college dated prior to March 7, 1885, or oath of practice prior to March 7, 1885. This section further provided for the compilation of these lists. Thus is made possible the securing of a complete list of every physician legally qualified to practice medicine, however qualified. In view of the fact that many of the best men in our profession qualified merely by registration and without a license from the Board, that these men have furnished sons who are numbered among our most distinguished fellows; that these men were the real pioneers in the field of medicine in the State, that these men rendered a splendid service to the people of the State; it is a graceful act indeed that the General Assembly should acknowledge this debt of gratitude by providing that a permanent centralized record should be made and thus preserve to posterity this honor roll of the men who served, surrounded by hardships and difficulties unknown to the present generation.

The trials, tribulations and difficulties encountered in securing these lists from the various clerks is an entirely different story, too long

to relate. Suffice it to say that ninety-eight are in hand. Of this number, eighty-nine are closed and ready for transcription. Nine lists have correspondence still pending. The amount of correspondence necessary to reconcile discrepancies has been enormous. Experiences of the past few months have demonstrated the wisdom of our law-makers in the passage of this law. When we tell you that only twelve lists correct as originally submitted have come in, some idea can be gained as to the task this work has been. Numberless irregularities have shown in the registration lists. Among these may be mentioned the registration of men on temporary license and license from other State Boards, and the registration of men of other professions and occupations in the physicians' record. Various clerks have included dentists, pharmacists, osteopaths, optometrists, veterinarians, chiropractors, and many others among the list of physicians certified as registered to practice medicine in their counties. A check of each list with the official register has made it possible to catch up with these discrepancies in each instance and at the same time have due corrections made in the local records. The vast majority of clerks have evidenced the heartiest spirit of co-operation in the carrying out of this task. Some few clerks have been indifferent, stubborn, unresponsive and even hostile; almost invariably the lists from these counties contained the most errors and irregularities. It has been found impossible to secure any response from two county clerks in spite of repeated letters following the mailing of the blank forms. The various lists contain a wealth of valuable information of various sorts.

In conclusion it will not be amiss to mention that the Medical Practice Act was measurably strengthened in the same act of the special session. Specific authorization was granted the Board to promulgate such rules governing the conduct of examinations as it saw fit. Machinery was provided by which a defendant and witnesses might be summoned in a hearing for revocation of license. The Board is no longer required to refund license fees of rejected applicants on examination. Finally the greatest achievement of all consisted in the repeal of the law permitting the registration of men without license. In the future only those holding a license from the Board of Medical Examiners of the State of North Carolina may legally register in any county in this State.

The past year has been a most fruitful one. We feel that these advances have been along progressive lines and to the best interest of the public and profession. Great strides have been made in medical legislation and medical licensure, until now our State can boast of having one of the best, if not the most excellent, medical laws of any State in the country.

Respectfully submitted,

BOARD OF MEDICAL EXAMINERS OF
THE STATE OF NORTH CAROLINA,
By K. P. B. BONNER, *Secretary.*

The Board of Medical Examiners of the State of North Carolina met in Raleigh from June 26th to June 30th, inclusive, in sixtieth regular annual session. One hundred and twenty applications were presented. Of this number, eighty-six took the written examinations and thirty-four applied for endorsement of credentials from other States.

Of the thirty-four applicants for endorsement of credentials, twenty-one were accepted; six failed to appear; six were rejected; and one was postponed for further investigation. Forty-one of the eighty-six applicants taking the regular examinations were students taking the examinations of the first two years in medicine. Of the remaining forty-five, applicants for license through examinations, thirty-seven successfully passed and eight failed. A total of fifty-eight were granted license; twenty-one by endorsement and thirty-seven by examination.

To Dr. Andrew Purefoy Newcomb, Jr., of Henderson, goes the honor of making the highest average in the examinations; his average being 93 2/7%. Dr. Harold Stevens Clark of Leicester was a close second with an average of 93% and Dr. Robert Alexander Ross of Morganton followed just behind Dr. Clark with an average of 92 3/7%. Dr. William Hollister of New Bern is deserving of honorable mention in that his average was only 1/7% behind the third highest man.

The following successfully passed the examinations:

Name	*Address*	*Grade %*
Bridger, Dewey Herbert	Bladenboro	87 6/7
Brunson, Edward P.	Florence, S. C.	88 3/7
Chaplin, Steenie Charles	Columbia	86 6/7
Clark, Ernest Walton, Jr.	Belhaven	90 1/7
Clark, Harold Stevens	Leicester	93
Crawford, William Jennings	LaGrange	83 3/7
Crowell, Gordon Bryan	Lincolnton	87 5/7
Culler, Baxter Clyde	Kernersville	88 6/7
Folger, Paul Bernay	Dobson	87 6/7
Funderburk, Nicholas Amon	Monroe	84 4/7
Hadley, William Sampson	Williamston	81 1/7
Harden, Robert Norman	Commerce, Ga.	89 5/7
Harvey, Wallace Watson	Greensboro	84 5/7
Hollister, William	New Bern	92 2/7
Ivey, Hubert Turner	Lenoir	85 6/7
Ketchie, James Meredith	Salisbury	89 2/7
Lancaster, Forrest Jackson	Lexington	83
Latimer, Wendell Lee	Hendersonville	89 3/7
Lee, Harry Wooten	Kinston	81 3/7
Liles, Royall Thomas	Wingate	91 2/7
Markham, Blackwell	Durham	86
Morris, Carlyle	Wilmington	87 2/7
Newcomb, Andrew Purefoy, Jr.	Henderson	93 2/7
Norment, William Blount	Trinity	84 6/7

Phillips, John William	Lillington	88 5/7
Pittman, Henry Lee	Fayetteville	84 1/7
Ridge, Clyde Franklin	Edgar	89
Rose, David Jennings	Bentonville	88 2/7
Ross, Robert Alexander	Morganton	92 3/7
Rudisill, John David	Lincolnton	83 1/7
Saleeby, Eli Richard	Wilson	83 2/7
Seay, Thomas Waller	Spencer	88 4/7
Tatum, Walter Low	Salisbury	85 1/7
Whitaker, Paul Frederick	Kinston	89 6/7
Wilkinson, Charles Tolbert	Wake Forest	80 4/7
Woody, William Hobson	Woodsdale	87 5/7
Wynter, Thomas Aaron Percival	Washington, D. C.	80

The following applicants were granted license by endorsement of credentials without examination:

Name	*Address*	
Andrews, John H.	White Rock	Massachusetts
Bailey, Robert Smith	Conetoe	Georgia
Beach, Mylnor Wilbur	Charleston, S. C.	South Carolina
Broun, Matthew Singleton	Asheville	New York
Brown, James Spencer	Montclair, N. J.	New Jersey
Chambers, Ptolemy P., Jr.	Landrum, S. C.	South Carolina
Cooper, John Hightower	Greensboro	Georgia
Dulin, Thomas Newton	Clover, S. C.	South Carolina
Epler, Blanch N.	Kalamazoo, Mich.	Michigan
Gyles, Ronald Corbin	Tarboro	South Carolina
Kirkpatrick, Thomas O.	Lowndesville, S. C.	South Carolina
McManus, Hugh Forrest	Brooks, Ga.	Georgia
Murchison, David R.	Wilmington	Virginia
Newbold, William Augustus	Kinston	Pennsylvania
Phillips, David Barringer	Youngstown, O.	Ohio
Rea, Green L.	Charlotte	Oklahoma
Sisk, Crete Nixon	Winston-Salem	South Carolina
Ware, Dudley B.	Fitzgerald, Ga.	Georgia
Waring, Elmar Stebbins	Raleigh	South Carolina
Wilkes, Marcus Branch	Richburg, S. C.	South Carolina
Wright, James Bones	Augusta, Ga.	Georgia

EXAMINATION IN SURGERY

1922

DR. L. N. GLENN

1. Discuss various suture materials, giving advantages and disadvantages, indications and contra-indications for each.

2. Discuss (a) promotion of wound healing, (b) interference with wound healing.

3. Mention causes of non-union of bones and give subsequent treatment.

4. Diagnose (a) stone in common bile-duct; (b) stone in kidney; (c) dislocated semilunar cartilage of knee; (d) appendicitis in infant.

5. How would you do (a) a skin-graft; (b) a bone-graft; (c) a tendon-graft?

6. State means, methods, and how you would employ them, in arriving at the following diagnoses: (a) diverticulum of œsophagus; (b) obstruction of a ureter; (c) hyperthyroidism.

7. Treat gun-shot wound through the liver.

8. Give etiology, symptoms, diagnosis and treatment of (a) pathological sinus; (b) fissure; (c) fistula.

9. Diagnose, differentiating, between osteo-sarcoma and tuberculosis of bone, and treat each.

10. Name five bacteria of surgical importance and state possible pathological consequences of activity of each.

EXAMINATION IN PRACTICE OF MEDICINE

1922

Dr. William P. Holt

1. Name three diseases spread by alvine discharges. Give briefly the treatment of each.

2. Give the signs and symptoms of focal infection; beginning arterio-sclerosis; early tuberculosis.

3. Give physical signs of mitral regurgitation. (a) differentiate between cardiac hypertrophy and cardiac dilatation. (b) What is Stokes-Adams syndrome?

4. Give differential diagnosis between hydronephrosis, pyelitis, and appendicitis.

5. Differentiate pellagra from sprue; give briefly symptoms and treatment of each.

6. Name several diseases and diseased conditions that cause choreiform movements. (a) Give symptoms and treatment of chorea. (b) What is athetosis?

7. Differentiate erysipelas from urticaria; give treatment of each. (a) Describe vitiligo and give treatment.

8. Differentiate pleuritis from intercostal neuralgia. Give treatment of each.

9. Give differential diagnosis of diphtheria and follicular tonsillitis. Give treatment of each.

10. Give significance of hematuria. (a) Determine its source. (b) Give a prescription for acute cystitis.

EXAMINATION IN MATERIA MEDICA, THERAPEUTICS, AND PHARMACOLOGY

1922

Dr. J. G. Murphy

1. What is the source from which eserine is obtained? How and for what purpose is eserine principally used?

2. Give the symptoms and treatment for bichloride of mercury poisoning.

3. Name two respiratory stimulants and two vasomotor depressants; give the indications for the use of each, the dose and method of administration.

4. Describe four diuretics and give the dose of each.

5. Write a prescription for (a) coryza; (b) tonsillitis; (c) acute otitis media; (d) acute laryngitis; (e) arthritis.

6. Describe the physiologic action of hyoscine, giving dose, and name a physiologic antidote.

7. How would you treat a patient, age 6, for acidosis that developed in 24 hours after taking ether?

8. For what pathologic conditions is salicylic acid administered? What symptoms indicate the discontinuance of the use of salicylic acid?

9. Describe briefly how autogenous vaccines are made and administered.

10. Define anæsthesia. Name the general and local anæsthetics commonly used, indications and contra-indications for each. How would you treat bad conditions that may arise during their administration?

EXAMINATION IN HISTOLOGY, BACTERIOLOGY, AND PATHOLOGY

1922

Dr. C. A. Shore

1. Discuss the essential gross and microscopic changes which occur in carcinoma of the stomach.

2. Given a patient with a lump in the breast, what characteristics would lead you to believe that the tumor was benign? (b) That it was malignant?

3. Given a case whose clinical symptoms suggest typhoid fever: (a) What steps would you take to aid in establishing the diagnosis? (b) From what sources and through what routes could the patient have acquired the infection? (c) In what portions of the body are the typhoid bacilli ordinarily found during the first ten days of illness? During the third and fourth week? During convalescence? (d) When a patient becomes a "chronic carrier," in what parts of the body do the typhoid bacilli usually establish their foci and how are they excreted?

4. What is the significance of B. coli in water supplies?

5. Given a patient suspected of having diphtheria, what steps would you take to establish a diagnosis, giving technique, and morphology of organism? (b) How may artificial immunity against diphtheria be secured? (c) How may immunity against diphtheria be tested?

6. What organisms may cause pneumonia?

EXAMINATION IN HYGIENE, CHEMISTRY, AND PHYSIOLOGY

1922

DR. WM. M. JONES

1. (a) Discuss briefly the different methods of sewage disposal in rural homes. (b) Of what practical value are morbidity and mortality statistics?

2. (a) Name the principal diseases that may be due to polluted water. (b) What would be a good prophylactic treatment for pellagra, for scurvy and for rickets?

3. (a) What are the essentials of Mendel's law? (b) Name the common mosquitoes of North Carolina, and what methods would you use to get rid of them? What methods would you use to get rid of flies?

4. (a) What is the chemical name of Glauber's salts, washing soda, baking soda, Epsom salts, and Monsel's solution? (b) Name the preparations of metallic mercury used in medicine.

5. (a) What is the common chemical antidote for mercury salts? (b) What is the difference, if any, in the chemical formula of the red and yellow Iodide, and the red and yellow oxide of mercury?

6. (a) What is Iodoform, and how made? (b) Give a test for albumen in urine and also for sugar; both qualitative and quantitative.

7. (a) Where are the Islands of Langerhans, and what is their supposed function? (b) Name the common conditions influencing blood pressure and blood velocity.

8. (a) What is the rate of flow in the capillaries?

9. What are the dangers of transfusing incompatible blood, and tell how you would determine whether or not A's blood could be used to transfuse B.

10. Describe fully the movements of the intestines.

EXAMINATION IN OBSTETRICS, GYNECOLOGY, AND PEDIATRICS

1922

DR. K. P. B. BONNER

1. Describe briefly the female organs of generation.

2. Give the etiology, symptoms, diagnosis and treatment of eclampsia.

3. Name the various positions and presentations occupied by the unborn baby.

4. Tell in detail, including technic, how you would do a complete hysterectomy.

5. What effect, if any, does infection with gonorrhœa or syphilis have upon the structures of the female organs of generation, and upon the act of reproduction, and upon the baby?

6. How would you treat a caruncle at the urethral meatus?

7. How is lactic acid milk prepared, and what are the special advantages claimed for it in infant feeding?

8. Give the etiology, symptoms, diagnosis and treatment of acute ileo-colitis.

9. Describe the symptoms, diagnosis, prognosis and treatment of a case of broncho-pneumonia in a child two years of age.

10. Discuss: (a) The causes of infantile mortality before, at and just following birth. (b) Medical supervision during the course of pregnancy. (c) The common factors in the production of gynecological conditions requiring treatment.

NOTE: This written examination will be supplemented by an oral examination.

EXAMINATION IN ANATOMY AND EMBRYOLOGY
1922
DR. L. A. CROWELL

1. Name the foramina in the posterior fossa of the skull and the structures which pass through them.

2. Describe the orbital cavity, naming the bones that enter into its formation.

3. Describe the scapula and name four muscles arising from its dorsal surface.

4. Describe a vertebra. How does a cervical differ from a dorsal vertebra?

5. Give the origin of the following muscles: Biceps flexor cubiti; Fibialis anticus.

6. Trace a drop of blood from the right auricle to the upper pole of the thyroid gland.

7. Name the branches of the internal carotid artery.

8. Describe the common bile duct; giving its relations.

9. Give the deep origin, foramen of exit and distribution of the fourth cranial nerve.

10. Describe the fœtal circulation; giving in detail the changes that take place after birth.

REGULATIONS GOVERNING APPLICANTS FOR MEDICAL LICENSE THROUGH EXAMINATIONS

Rule 1. An applicant for license to practice medicine in North Carolina must appear before the Board of Medical Examiners in regular session.

Rule 2. The applicant must be at least twenty-one years of age and of good moral character. In all cases, the applicant will be required to present certificates of character from at least two persons known to the Board.

Rule 3. Each applicant must possess an academic education equivalent to the entrance requirements of the University of North Carolina.

Rule 4. Only graduates holding a diploma conferring the degree of Doctor of Medicine from a medical college in good standing will be admitted to the examinations; except that the degree is not required in the case of partial examinations. Only graduates of Class A medical colleges are acceptable to this Board for examinations.

Rule 5. Each applicant must pay a fee of Fifteen ($15.00) Dollars to the Secretary of the Board. Applicants taking the examinations in two halves will be required to pay Seven and One-Half ($7.50) Dollars for each half.

Rule 6. No preliminary application is required. After the above regulations have been met, the applicant is furnished a registration card to be completely filled out in his own hand-writing and deposited with the Board.

Rule 7. Applicants will be examined upon the following branches of medical science: Anatomy and Embryology; Histology, Bacteriology and Pathology; Physiology, Chemistry and Hygiene; Pharmacology, Materia Medica and Therapeutics; Obstetrics, Gynecology and Pediatrics; Surgery; and Practice of Medicine.

Rule 8. Students who have completed, without conditions, the first two years' course of study in accredited medical schools, will be admitted to the examinations on: Anatomy and Embryology; Histology, Bacteriology and Pathology; and Physiology, Chemistry and Hygiene. Such admission will be subject to all provisions of Rules One, Two, Three, Five and Six; except that portion of Rule Two requiring the applicant to have reached his majority.

Rule 9. The grades made by students taking the examinations of the first two years' branches will be set to the credit of the applicant; and when he has completed the entire number of examinations, the individual grades will be assembled, the average grade determined and the result announced.

Rule 10. The examinations will be written on all subjects, and in addition such oral and practical examinations will be given as deemed necessary in determining the real knowledge of applicants upon any branches. In order to obtain a license, each applicant must attain an average grade of eighty (80%) per cent. Provided, however, that no grade must fall below fifty (50%) per cent on any single examination.

REGULATIONS GOVERNING APPLICANTS FOR MEDICAL LICENSE THROUGH ENDORSEMENT OF CREDENTIALS

Rule 1. Endorsement is granted only to men of known reputation and ability. In the matter of endorsement, this Board lays stress upon the qualifications of the individual applicant rather than the particular State license he may hold. Our system of endorsement is in reality an endorsement of the credentials of the individual. This is eminently fair both to the public, whom this Board represents, and the applicant. For that reason, the members of the Board must be convinced that each applicant is a man of intelligence, sobriety and high personal character.

Rule 2. Consistent with the idea of individual endorsement of credentials, it is required that every applicant appear in person before the Board of Medical Examiners in regular or stated session, at the same time that his application is considered. Since this personal interview is so important, it is obviously impossible to make a definite promise of favorable action upon any application until after such appearance before the Board. Under no circumstances is an exception ever made to this rule.

Rule 3. No license through endorsement is ever granted in the intervals between the meetings of the Board, or in the absence of the applicant. The Board, as a whole, reserves to itself the exclusive right to grant license to practice medicine in this State.

Rule 4. The laws of this State do not permit the granting of any temporary license, or permit, to practice medicine.

Rule 5. Any person is ineligible for consideration who has ever failed on the examinations of the Board of Medical Examiners of the State of North Carolina.

Rule 6. Each applicant must possess a good preliminary academic education and have graduated with the degree of Doctor of Medicine from a high class medical college.

Rule 7. Each applicant to be entitled to consideration for endorsement of credentials must:

1. Be the original owner of a license to practice medicine issued by some legally created State Medical Examining Board, and in addition thereto:
   a. He must have had at least five years' experience in successful private practice.
   b. Or he must have had two years' successful experience as interne in a well-recognized hospital.
   c. Or he must have filled positions of medical trust accounted by this Board as the equal of these.

2. Have successfully passed the examinations and been admitted to the United States Public Health Service, the Medical Corps of the regular United State Army, or the Medical Corps of the regular United States Navy, and have been commissioned therein. In every case, the applicant must have been continuously in active service, or have received honorable discharge and have been in uninterrupted successful private practice to the date of such application.

3. Have successfully passed the examinations of the National Board of Medical Examiners.

Rule 8. Every applicant must fill out a blank application in which information is given relative to educational attainments; certificates of licensure under subdivision one of Rule Seven, or certificate from the proper officers of either branch of the Federal Government mentioned in subdivision two of Rule Seven, or certificate from the proper officers of the National Board of Medical Examiners if qualifying under subdivision three of Rule Seven; moral character; and identity. In each case the applicant must accompany his application with two recent photographs of himself; one of which must be autographed and certified, the other to be pasted in the proper space of the blank.

Rule 9. All applications must be completed and filed with the Secretary of the Board at least thirty days prior to the session of the Board at which it is to be considered. Blank applications may be obtained from the Secretary upon request.

Rule 10. The endorsement fee is Fifty ($50.00) Dollars; which fee must be paid upon the acceptance of the applicant by this Board.

Rule 11. College diplomas, State licenses, permanent certificates of hospital service, commissions in or discharges from the medical service of the

United States Army, Navy or Public Health Service, and other like valuable papers must be presented by the applicant to the Board. Under no circumstances should such papers ever be mailed to the Secretary with the formal application. There is great danger of loss in the mails; and the Board refuses to assume responsibility for their safe-keeping after arrival in the office.

Rule 12. The burden of proof rests with the applicant to properly present his credentials. For that reason, all statements must be supported by proper certificates.

Rule 13. Unless the applicant meets these requirements and his credentials measure up to the standard required, his application will not be accepted. Omissions and errors in filling out the application blank will constitute a cause for refusal to receive consideration.

Rule 14. This Board reserves the privilege of rejecting any applicant, regardless of how well the applicant may consider his credentials measure up to standard required.

THE FOLLOWING APPLICANTS WERE LICENSED BY RECIPROCAL ENDORSEMENT OF CREDENTIALS IN GREENSBORO ON DECEMBER 3, 1921

Name	Address	Pre. Educat.	Med. College	Year	Cert.
Bulla, Mora Simeon	Elizabeth City	4 yrs. H. Sch.	Miami Medical	1905	Ind.
Gallego, Louis Nath	Asheville	4 yrs. H. Sch.	L. I. Col. Hosp.	1912	N. Y.
Graham, John Alex	Kansas City, Mo.	4 yrs. H. Sch.	Col. M. & S., Chic.	1915	Ill.
Hall, James Sprunt	Wilmington	B. S. *Davidson	Univ. Calif.	1900	Cal.
Jacoby, Douglas P. A.	Newport, R. I.	High School	Starling Med.	1894	R. I.
Kane, Evan O'Neill	Kane, Pa.	High School	Jefferson	1884	Pa.
Killinger, Raymond R.	Rocky Mt.	A. B. *Roanoke	Yale Univ.	1919	Va.
Lindorme, Arnold H.	Wilkesboro	High School	Emory Univ.	1903	Ga.
Miller, Oscar L.	Gastonia	2 yrs. *U. Ga.	Atlan. C. P. & S.	1912	Ga.
Moorer, Morgan P.	Biltmore	1 yr. *Clemson College	M. Col. St. S. C.	1901	S. C.
Morey, Mary	Alta Pass		Womens, Penn.	1889	Mass.
Oates, William Clyde	Grover	4 yrs. *U. N. C.	N. C. Medical	1919	Va.
Pollitzer, Richard M.	Charleston, S. C.	2 yrs. C. Chas.	M. Col. St. S. C.	1908	S. C.
Shirley, Harold C.	Charlotte	B. S. *Citadel	Johns Hopkins	1918	Md.
Stokes, Robert L.	Brevard	Lieutenant *Citadel	Col. P. & S., Balt.	1903	S. C.
Strickland, Williard M.	Wendell	B. S. *Wake For.	Med. Col. Va.	1919	Va.
Thompson, Alex Contee	Asheville	A. B. *St. Johns	Georgetown U.	1911	D. C.
Worthington, Frank D.	Charlotte	A. B. *Princeton	Johns Hopkins	1917	Md.

RAILWAY SURGEONS' ASSOCIATION OF NORTH CAROLINA

On the evening of April the 26th a number of gentlemen met in the parlor of the Robert E. Lee Hotel, Winston-Salem, to discuss the advisability of organizing in North Carolina a branch of the American Railway Surgeon's Association. After the object of the meeting had been stated by Dr. W. A. Monroe and fully discussed, a motion prevailed to proceed to organization. Officers were elected and a new organization launched for future usefulness.

OFFICERS

DR. J. VANCE MCGOUGAN ..... *President*
DR. J. R. PARKER ..... *First Vice-President*
DR. A. W. KNOX ..... *Second Vice-President*
DR. T. C. JOHNSON ..... *Third Vice-President*
DR. J. W. HALFORD ..... *Secretary-Treasurer*

EXECUTIVE COMMITTEE

Dr. T. E. Anderson	Two years
Dr. F. R. Harris	Two years
Dr. W. A. Monroe	Four years
Dr. N. A. Thompson	Four years
Dr. J. D. Edwards	Six years
Dr. W. W. McKenzie	Six years

CONSTITUTION AND BY-LAWS

CONSTITUTION

ARTICLE I.

Name. Section 1. The name of this Association shall be "The Railway Surgeons' Association of North Carolina."

Object. Section 2. The object of this Association shall be to organize the surgeons of the State of North Carolina in the most efficient manner possible; to promote professional brotherhood and the welfare of its members and their employers.

ARTICLE II.

Members. Section 1. Members of this Association shall be limited to the railway surgeons of the State of North Carolina, who are members of the Medical Society of the State of North Carolina.

Honorary Members. Section 2. Railway surgeons of other states may become honorary members of this Association by a two-thirds vote of the Association.

ARTICLE III.

Officers. Section 1. The officers of this Association shall consist of a president and three vice-presidents, who shall be elected for one year, and a secretary-treasurer who shall be elected for a term of three years.

Election. Section 2. The officers of this Association shall be elected by two-thirds of those present and voting.

ARTICLE IV.

Annual Meeting. Section 1. The annual meeting shall be held each year at such place and time as shall be selected by the executive committee.

ARTICLE V.

Code of Ethics. Section 1. The code of ethics of the American Medical Association shall be the guide of conduct for this Association.

BY-LAWS

ARTICLE I.

Opening exercise.
Roll call.
Reading of minutes of last meeting.
Report of committee on arrangements.
Report of special committees.
Reading of papers.
New businesss.
Report of secretary-treasurer.
Election of officers.
Installation of officers.

ARTICLE II.

Finances. Section 1. Each member of this Association shall pay a fee of $2.00 annually, which sum is expected to be paid at the meeting.

Section 2. The Secretary-Treasurer shall be paid a sum annually, as recommended by the executive committee.

ARTICLE III.

Papers. Section 1. Not more than twenty minutes shall be occupied in reading papers. No member shall be allowed to speak the second time on the same subject, or consume more than five minutes in discussion.

ARTICLE IV.

Rules. Section 1. Roberts Rules of Order or Manual shall be accepted as parliamentary guide in the deliberations and conduct of this organization.

The next meeting of the Association will be held in Asheville, April 16, 1923, preceding the meeting of the Medical Society of the State of North Carolina.

ALPHABETICAL LIST OF MEMBERS OF MEDICAL SOCIETY WITH POSTOFFICE ADDRESS

*Present at 1922 Meeting at Winston-Salem.

Name	*Address*
Abel, J. F.	Waynesville
Abernathy, Claude O.	Raleigh
Abernathy, H. L.	Hickory
Abernathy, H. N.	Denver
Abernathy, Miles B.	Reidsville
*Abernethy, E. A.	Durham
Achorn, John W.	Pinebluff
Adam, C. A.	Durham
Adams, Charles E.	Gastonia
Adams, J. L.	Asheville
Adams, L. C.	LaGrange
*Adams, M. R. (Hon.)	Statesville
*Adams, N. B.	Murphy
Adams, R. K.	Raleigh
Adkins, M. T.	Durham
Alexander, Annie L. (Hon.)	Charlotte
Alexander, George	Asheville
*Alexander, Jas. R.	Charlotte
Alexander, M. Janet	Montgomery, India
*Allan, William	Charlotte
Allen, Benj. G.	Henderson
*Allen, Chas. I.	Wadesboro
Allen, Jos. A.	New London
Allen, Rufus L.	Waynesville
*Allgood, R. A.	Fayetteville
Allhands, John M.	Cliffside
Ambler, Arthur C.	Asheville
Ambler, Chas. P. (Hon.)	Asheville
Anders, McT. G.	Gastonia
Anderson, Abel	Denton
*Anderson, Albert (Hon.)	Raleigh
Anderson, Chas. A.	Burlington
Anderson, Jas. A.	Gastonia
Anderson, Jas. G.	Asheville
Anderson, Jasper N.	Albemarle
Anderson, Jas. Robert	Morganton
*Anderson, Thos. Eli (Hon.)	Statesville
*Anderson, Wade H.	Wilson
Andrews, Nathan H.	Rowland
Angle, J. B.	Ocracoke
Anthony, J. E.	Kings Mountain
Archer, Isaac J.	Black Mountain
Armfield, Romulus	Marshville
*Armstrong, C. W.	Salisbury
*Asbury, Francis E. (Hon.)	Ashboro
*Ashby, E. C.	Mount Airy
Ashby, J. M.	Raleigh
Ashby, Thos. B.	Mount Airy
Ashcraft, J. E.	Monroe
*Ashe, J. R.	Charlotte
*Ashworth, B. L.	Marion
*Ashworth, W. C.	Greensboro
Attmore, G. S. (Hon.)	Stonewall
Austin, D. R.	Charlotte
*Austin, Frederick DeC.	Charlotte
Austin J. A.	Charlotte
*Austin, J. W.	High Point
Averitt, K. G.	Cedar Creek
*Aydlette, H. T.	Greensboro
Aydlette, Jos. P.	Earl
Baggett, Leaman	Tabor
Bailey, Robt. S.	Greenville
Baird, C. A.	Mount Airy
Baird, John W.	Mars Hill
Baker, Horace M.	Lumberton
Baker, J. M. (Hon.)	Tarboro
Baker, W. E.	Arden
Bandy, W. G.	Maiden
Bangle, J. A.	Concord
Banner, Chas. W.	Greensboro
Barbee, G. S.	Zebulon
Barber, Y. M.	Macclesfield
Barefoot, M. L.	Dunn, Rt. 6
Barnes, B. F.	Elm City
*Barrett, H. P.	Charlotte
*Barron, A. A.	Charlotte
Basnight, Thos. G.	Stokes
Bass, H. H.	Henderson
Bass, Spencer P.	Tarboro
Battle, I. P.	Rocky Mount
Battle, J. P.	Nashville
*Battle, J. T. J. (Hon.)	Greensboro
Battle, S. W. (Hon.)	Charlotte
Baynes, R. H.	Durham
Baynes, R. S.	Hurdle Mills
*Beall, L. G.	Asheville
Beall, Wm. P. (Hon.)	Greensboro

Name	*Address*
Beam, H. M.	Wood
Beam, R. S.	Lumberton
Beasley, E. B.	Fountain
Beath, Thomas	Raleigh
Beckwith, R. P.	Rosemary
Beers, Charles	Asheville
*Bell, A. E.	Mooresville
Bell, Carl W.	Raleigh
Bell, G. E.	Wilson
Bell, George M.	Wakefield
Bell, J. C.	Maysville
Bellamy, Robert H.	Wilmington
Belton, J. F.	Winston-Salem
Benbow, J. T.	Winston-Salem
Bennett, W. H.	Statesville
Benthall, R. F.	Aulander
Benton, Geo. R.	Fremont
*Bernard, Holman	Pinnacle
Berry, John	Greensboro
*Best, Benj. W.	Greensboro
Best, Henry B.	Wilson
Biggs, Montgomery H.	Rutherfordton
Billings, G. M.	Morganton
Bingham, G. D.	Sugar Grove
Bisch; Louis E.	Asheville
*Bitting, Numa Duncan	Durham
Bizzell, Thos. M.	Goldsboro
*Black, O. R.	Landis
Blackburn, T. C.	Hickory
*Blair, A. McNiel	Southern Pines
*Blair, J. L.	Gastonia
Blair, M. P.	Marshville
Blalock, B. K.	Charlotte
Blevins, Manly	West Jefferson
Blue, A. McN.	Carthage
*Boaz, Thos. A.	Stoneville
Boddie, Needham P. (Hon.)	Durham
*Boger, D. T.	Rockwell
Boice, E. S.	Rocky Mount
Bolles, Charles P., Jr.	Wilmington
Bonner, A. C.	Greensboro
Bonner, H. M.	Raleigh
Bonner, J. B.	Aurora
*Bonner, K. P. B.	Raleigh
*Bonner, O. B.	Raleigh
*Booker, L. S.	Durham
Boone, S. B.	Jackson
*Boone, W. H.	Durham
Booth, Thos. L.	Oxford
*Bost, T. C.	Charlotte
Bostic, Wm. C.	Forest City
Bowdoin, George W.	Wilmington
Bowling, Edwin Holt	Durham
*Bowman, E. L.	McDonalds
Bowman, H. E.	Aberdeen
*Bowman, H. P.	Greenboro
Bown, Herbert H.	Asheville
*Bowers, M. A.	Winston-Salem
*Boyden, Wm. C.	China Grove
Boyette, E. C.	Charlotte
Boyles, A. C.	Troy
*Boyles, J. H.	Greensboro
Boyles, M. F.	Dallas
Braddy, Wade H.	Greensboro
Bradshaw, Isaac W.	Relief
*Bradsher, Wm. A.	Roxboro
*Brandon, Wm. R.	Statesville
Brantley, Julian C.	Spring Hope
Brawley M. H.	Salisbury
Brawley, R. V.	Salisbury
Bray, T. L.	Plymouth
*Brenizer, A. G., Jr.	Charlotte
*Brewer, J. Street	Roseboro
Briggs, Henry H.	Asheville
Bristow, C. O.	Morganton
Brittle, Paul C.	Conway
*Brockman, H. L.	Greensboro
*Brooks, B. U.	Durham
Brooks, G. M.	Elm City
Brooks, Hugh M.	West Jefferson
*Brooks, R. E.	Burlington
Brookshire, H. G.	Asheville
*Brown, Clarence E.	Faith
Brown, G. W.	Raeford
Brown, James	Baltimore, Md.
Brown, J. P.	Fairmont
*Brown, J. S.	Hendersonville
Brownson, Wm. C.	Asheville
Broughton, N. B.	Raleigh
*Bryan, Lorenzo D.	Sneads Ferry
*Bryant, Chas. G.	Jonesville
Bryson, E. J.	Cullowhee
Buchanan, C. L.	Union Mills
*Buchanan, E. J.	Lexington
Buchanan, L. T.	Raleigh
*Buchanan, S. E.	Concord
Buckner, J. M.	Swannanoa
Buckner, Rufus G.	Asheville

Name	*Address*
Buffalo, J. S.	Garner
Buie, R. M.	Duke
*Bulla, A. C.	Raleigh
Bulla, M. S.	Elizabeth City
Bullard, G. F.	Elizabethtown
*Bullitt, J. B.	Chapel Hill
*Bullock, J. H.	Oxford
Bullock, Thomas C.	Autryville
Bullock, W. B.	Oxford
*Bulluck, Ernest S.	Wilmington
Bunn, J. J.	Mt. Pleasant
Burbage, Thos. I.	Como
*Burleson, W. B.	Plumtree
Burleyson, L. N.	Concord
Burnett, Isaac E.	Mars Hill
Burrus, John T.	High Point
Burt, Benj. W.	Holly Springs
Burt, S. P.	Louisburg
*Busby, Julian G.	Spencer
Butler, Bruce F.	Cooper
*Butler, Leroy J.	Winston-Salem
Butt, R. B.	Bakersville
Butt, Virgil R.	Bakersville
*Byerly, A. B.	Cooleemee
*Bynum, C. M.	Princeton
*Bynum, John (Hon.)	Winston-Salem
*Bynum, Wade H.	Germantown
Caddell, S. W.	Elon College
Caldwell, Daniel G. (Hon.)	Concord
*Caldwell, J. H.	Charlotte
Calloway, A. W.	Asheville
Campbell, Alton C.	Raleigh
Campbell, J. R.	Newton
Campbell, J. W.	Gastonia
Candler, Chas. Z.	Sylva
Cannady, N. B.	Laurinburg
Cannady, Sam H.	Oxford
Capehart, Alamson	Roxobel
*Carlton, Romulus L.	Winston-Salem
Carmichael, T. W.	Rowland
Carpenter, F. A.	Statesville
Carr, M. L.	Kinston
Carr, Ransom Lee	Rose Hill
Carroll, E. D. Dixon	Raleigh
Carroll, John L.	Hookerton
Carroll, John W.	Wallace
Carter, G. H.	Kings Creek
*Carter, H. W.	Washington
*Carter, P. C.	Weldon
Cason, H. M. S.	Edenton
*Casteen, Kenark	Mayodan
Cathell, J. E.	Wilmington
*Caton, Geo. A.	New Bern
Cauble, H. H.	Kannapolis
Caveness, Z. M.	Raleigh
Cease, H. Wm.	Concord
Chapin, Wm. B.	Pittsboro
Cheadle, C. M.	Asheville
Cheatham, A. (Hon.)	Durham
*Cheatham, Goode	Henderson
Cheek, C. E.	Fuquay Springs
Cheeseborough, T. P.	Asheville
*Chester, P. J.	Greenville
*Choate, G. Wm.	Salisbury
Clark, D. D.	Clarkton
Clark, E. S.	Clarkton
Clark, G. L. (Hon.)	Clarkton
Clark, W. H.	Dorsey
Cliff, B. F.	Hendersonville
Clinton, Roland S.	Gastonia
Clodfelter, C. M.	Lexington
Cobb, Wm. H., Jr.	Goldsboro
*Cocke, C. H.	Asheville
Cocke, E. R.	Asheville
Cocke, Jere E.	Asheville
Codington, H. A.	Wilmington
*Coe, Samuel S.	High Point
Coffey, Lawrence H.	Lenoir
Colby, C. De W.	Asheville
*Cole, Walter F.	Greensboro
*Coleman, G. S.	Kenly
*Collins, George	Charlotte
*Coltrane, Wallace E.	Dunn
Combs, Howard J.	Elizabeth City
Cook, H. L.	Fayetteville
Cooke, G. C.	Winston-Salem
*Cooper, G. M.	Raleigh
Coppedge, Neilson P.	Biscoe
Coppedge, T. O.	Nashville
*Coppridge, W. M.	Durham
Corpening, O. J.	Granite Falls
*Costner, Thos. F.	Lumberton
Cotten, Clyde E.	Asheville
*Couch, V. F.	Yadkinville
Council, J. B. (Hon.)	Salisbury
Covington, J. M. (Hon.)	Wadesboro
Cowell, Will H.	Shawboro

Name	*Address*
Cox, Benj. F.	Palmerville
Cox, B. T.	Winterville
Cox, E. L.	Jacksonville
Cox, G. S.	Tabor
Cox, Thos. A.	Hertford
Cozart, W. S.	Holly Springs
*Craig, S. Douglas	Winston-Salem
Cranmer, J. B.	Wilmington
*Craven, F. C.	Ramseur
Craven, Thomas	Huntersville
Craven, W. P.	Rt. 6, Charlotte
Craven, W. W.	Huntersville
*Crawford, Robt. H.	Rutherfordton
Crawford, W. B.	Goldsboro
Crocker, Wm. D.	Warsaw
Croom, G. H.	Wilmington
*Crouch, A. McR.	Wilmington
Crouch, T. D.	Stoney Point
*Crowell, A. J.	Charlotte
*Crowell, L. A.	Lincolnton
Crumpler, Paul	Clinton
*Cummings, M. P.	Reidsville
Currie, D. S.	Parkton
Cutchin, J. H.	Whitakers
*Daligny, Charles	Troy
*Dalton, D. N. (Hon.)	Winston-Salem
*Dalton, Wm. N.	Winston-Salem
Dameron, Ernest L.	Star
Daniel, N. C.	Oxford
*Daniels, O. C.	Goldsboro
Daniels, R. L.	New Bern
Darden, O. B.	Richmond, Va.
*Daughtery, J. E.	Brooklyn, N. Y.
*Davidson, John E. S.	Charlotte
Davis, F. M.	Canton
Davis, George	Beaufort
*Davis, Jas. W.	Statesville
Davis, J. Franklin	High Falls
*Davis, J. M.	Winston-Salem
*Davis, Thomas W.	Winston-Salem
Davis, Ralph H.	Wilmington
Davis, R. B.	Weeksville
Davis, W. C.	Summerfield
Dawson, W. E.	Hookerton
*Dawson, Walter W.	Grifton
Deans, A. W.	Battleboro
DeArmon, J. McC. (Hon.)	Charlotte
Dees, D. A.	Bayboro
*Dees, Ralph E.	Greensboro
*Dees, Rigdon O.	Greensboro
*DeHart, Jas. S.	Bryson City
*DeLaney, Charles O.	Gastonia
Denchfield, A. L.	Asheville
*Denson, H. A.	Bennett
*Dick, Julius V.	Gibsonville
*Dickie, J. W.	Southern Pines
Dickinson, Elijah T.	Wilson
Dillard, G. P.	Draper
Dillard, Richard, Jr. (Hon.)	Edenton
*Dimmett, J. A.	Gastonia
*Dixon, G. G.	Ayden
*Dixon, Guy E.	Hendersonville
*Dixon, Hubert C.	Madison
Dixon, Joseph	Ayden
Dixon, Wm. H.	Ayden
Dixon, W. H.	Rocky Mount
*Dodson, H. H. (Hon.)	Greensboro
Donnelly, J.	Charlotte
Drafts, A. E.	Hendersonville
Duffy, Leinster	New Bern
Duffy, R. N.	New Bern
Duncan, Amos E.	Avondale
*Duncan, J. E.	North Wilkesboro
Dunlap, L. V.	Albemarle
Dunn, W. L.	Asheville
Duval, T. F.	Bolton
Eagles, Chas. S.	Stantonsburg
Easley, P. S.	Statesville
Eckel, O. F.	Asheville
*Eddleman, H. M.	Gastonia
Edgerton, Jas. L. (Hon.)	Hendersonville
*Edwards, B. O.	Asheville
Edwards, C. P.	Asheville
Edwards, F. D.	Belwood
Edwards, G. C. (Hon.)	Hookerton
*Edwards, J. D.	Siler City
*Elias, L. W.	Asheville
Ellen, C. J.	Greenville
Eller, A. B.	Readybranch
Eller, C. R.	Theta
*Ellington, A. J.	Goldsboro
*Ellington, Jas. H.	Sandy Ridge
Ellington, Samuel B.	Wentworth
Elliott, A. H.	Wilmington
*Elliott, J. A.	Charlotte
*Elliott, W. F.	Lincolnton

Name	Address
Ellis, Frank A.	Salisbury
Ellis, R. C. (Hon.)	Shelby
English, E. S.	Brevard
English, E. L.	Rosman
English, I. L.	Faust
Erwin, Evan A.	Laurinburg
Evans, J. E.	Wilmington
Evans, L. B.	Windsor
Evans, W. E.	Rowland
Everett, A. C.	Rockingham
Everetts, J. J.	Asheville
Faison, I. W. (Hon.)	Charlotte
Faison, W. W. (Hon.)	Goldsboro
Faison, Yates W.	Charlotte
Farrior, J. W.	Warsaw
Farthing, L. E.	Wilmington
Fassett, B. W.	Durham
Faucett, T. S.	Burlington
Fearing, Isaiah	Elizabeth City
Fearing, Zenas	Elizabeth City
Fearington, J. P.	Winston-Salem
Felts, Robt. L.	Durham
Fenner, Edwin F.	Henderson
Ferguson, R. T.	Charlotte
Fetner, L. M.	Charlotte
Fetzer, P. W.	Mayodan
Fields, B. T.	Greensboro
Finch, O. E.	Apex
Fitzgerald, J. H.	Smithfield
Flack, Roswell E.	Asheville
Flagge, P. W.	Jamestown
Fleming, M. I.	Rocky Mount
Fleming, G. M.	Cleveland
Fleming, W. L.	Enfield
Fletcher, M. H. (Hon.)	Asheville
Flippin, Jas. M.	Winston-Salem
Flippin, R. E. L.	Pilot Mountain
Flippin, S. T.	Siloam
Flowers, C. A.	Wendell
Flowers, C. E.	Zebulon
Flowers, G. E.	Hickory
Floyd, L. D.	Cerro Gorda
Flynt, S. S.	Rural Hall
Foard, Frederick T.	Hickory
Fortune, Alex. F.	Greensboro
Foster, J. F.	Sanford
Fouts, J. H.	Franklin
Fowler, M. L.	Zebulon
Fox, M. F. (Hon.)	Guilford College
Fox, Thos. I.	Franklinville
Frazer, H. T.	Asheville
Freeman, Jere	Wilmington
Freeman, Richard N. (Hon.)	Burlington
Freeman, R. H.	Raleigh
Fresh, Wm. M.	Weaverville
Frizzell, M. T.	Ayden
Fulp, Elias	Fulp
Furgerson, H. B.	Halifax
Futrell, L. M.	Murfreesboro
Gage, L. C.	Charlotte
Gainey, John W.	Fayetteville
Gallant, Robert M.	Charlotte
Galloway, W. C. (Hon.)	Wilmington
Gamble, J. F.	Lincolnton
Gamble, J. R.	Lincolnton
Gardner, Garrett D.	Asheville
Garren, R. H.	Monroe
Garrett, F. B.	Rockingham
Garrett, F. J.	Rockingham
Garrenton, Cecil	Bethel
Garrison, D. A.	Gastonia
Garriss, F. H.	Lewiston
Garvey, R. R.	State Road
Gary, R. H.	Murfreesboro
Gates, Franklin P.	Manteo
Gatling, Oscar S.	Knots Island
Gayle, Edward M.	Richmond, Va.
Gentry, Geo. W.	Timberlake
Gibbon, James	Charlotte
Gibbon, R. L. (Hon.)	Charlotte
Gibbs, E. W.	Shelby
Gibson, John S.	Gibson
Gibson, M. R.	Raleigh
Gilreath, Frank H.	N. Wilkesboro
Gill, Robert J.	Henderson
Gilmer, Chas. S.	Rt. 6, Greensboro
Gilmore, W. D.	Johnson City, Tenn.
Ginn, Theo. L.	Goldsboro
Glascock, J. H.	Greensboro
Glenn, Eug. B.	Asheville
Glenn, Henry F.	Gastonia
Glenn, Lucius N.	Gastonia
Gold, Ben	Shelby
Gold, Chas. F.	Ellenboro
Gold, G. M.	Rt. 5, Shelby
Gold, T. B.	Lawndale

Name	*Address*
*Goley, Wm. Roffin	Shallotte
Goley, Wm. Rankin	Graham
*Goode, T. V., Jr.	Statesville
Goodman, A. B.	Lenoir
Goodwin, A. W. (Hon.)	Raleigh
Gordon, P. L.	Elizabeth City
Gouge, A. E.	Bakersville
Gouger, Geo. J.	Concord
Gove, Anna M.	Greensboro
Grady, Jas. C.	Kenly
Grady, Leland V.	Rt. 2, Wilson
Grady, Wm. E.	Tryon
Graham, Benj. R.	Wilmington
Graham, Geo. A.	Raeford
Graham, Wm. A. (Hon.)	Charlotte
Grantham, Wm. L.	Asheville
*Gray, E. P.	Winston-Salem
*Grayson, C. S.	High Point
Greene, A. W.	Ahoskie
Greene, Jos. B.	Asheville
Green, J. C.	Greeville
*Green, Thos. M.	Wilmington
Green, Wm. W.	Tarboro
Greenwood, A. B.	Asheville
Greenwood, S. E.	Fletcher
Grier, Charles T.	Carthage
Griffin, J. A. (Hon.)	Clayton
Griffin, M. A.	Asheville
*Griffin, W. R.	Asheville
Griffith, F. W.	Asheville
*Griffith, L. M.	Asheville
Griggs, John B.	Elizabeth City
Griggs, W. T.	Poplar Branch
*Grimes, W. L.	Winston-Salem
*Hackney, Ben. H.	Lucama
Hagaman, J. B.	Todd
*Halford, J. W.	Lillington
*Hall, Julius C.	Albemarle
Hall, P. B.	Pembroke
Halsey, Benj. F.	Roper
Hamilton, Jno. H.	Wilmington
*Hammock, J. C.	Walkertown
Hamrick, J. Y., Jr.	Boiling Springs
Hamrick, T. G.	Shelby
Hand, Edgar H.	Pineville
*Hanes, F. M.	Winston-Salem
*Hanes, J. L.	Pine Hall
Hardee, Parrott R.	Stem
*Harden, Graham	Burlington
*Hardin, E. R.	Lumberton
Hardin, R. H.	Boone
Hardison, Wm. H.	Creswell
Hardy Ira M.	Kinston
Hargrove, R. H. (Hon.)	Robertsonville
*Hargrove, W. F.	Kinston
Harper, J. H.	Snow Hill
Harper, J. M.	Mooresboro
Harrell, Geo. N.	Murfreesboro
Harrell, Samuel N.	Tarboro
Harrill, L. B.	Caroleen
Harris, A. G.	Fairfield
*Harris, F. R. (Hon.)	Henderson
Harris, Isaac A. (Hon.)	Rt. 2, Alexander
Harris, John H.	Franklinton
Harrison, Edmund	Greensboro
*Harrison, H. H.	Asheville
Harriss, Andrew H.	Wilmington
Hart, E. R.	Wilmington
Hartsell, J. A.	Concord
Halsey, Clyde K.	Charlotte
Hassell, Jas. L.	Creswell
Hatcher, M. A.	Hamlet
Hatchcock, Thos. A.	Norwood
Hayes, L. O.	Fremont
Hayes, R. B.	Hillsboro
Hays, A. H.	Fairmont
Hays, B. K.	Oxford
Haywood, F. J. (Hon.)	Raleigh
Haywood, Hubert (Hon.)	Raleigh
Haywood, H. B., Jr.	Raleigh
*Hayworth, C. A.	Asheboro
Hege, J. Roy	Clemmons
Heilig, H. G.	Salisbury
Helms, T. L.	Seagrove
*Helsabeck, C. J.	Germantown
*Helsabeck, R. S.	Mizpah
*Hemmingway, J D.	Bethel
Henderson, C. C.	Mt. Olive
Henderson, John P.	Swansboro
Henderson, R. B.	Franklinton
*Henderson, S. McD.	Charlotte
*Henry, T. B.	Greensboro
Herbert, F. L.	Andrews
Herbert, Wm. P.	Asheville
*Herring, Benj. S.	Wilson
Herring, W. C.	Parsons, Kas.

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*Hiatt, H. B.	High Point
Hickman, M. T.	Hudson
Hicks, Calvin S.	Durham
Hicks, I. F.	Dunn
Hicks, Romeo	Henrietta
*Hicks, V. M.	Raleigh
Hicks, Wm. N. (Hon.)	Durham
Highsmith, Charles	Dunn
*Highsmith, J. D.	Fayetteville
Highsmith, J. F.	Fayetteville
Highsmith, Seavy	Fayetteville
Highway, S. C.	Murphy
*Hill, D. J.	Lexington
Hill, J. N.	Murphy
Hill, Wm. I.	Albemarle
*Hill, W. Lee	Rt. 4, Lexington
Hines, E. R.	Rocky Mount
Hinnant, Milford	Micro
Hipp, Edw. R.	Charlotte
Hipps, A. G. T.	Asheville
*Hobgood, J. E.	Thomasville
*Hocutt, B. A.	Clayton
Hodges, Jos. M.	Cranberry
Hodgin, H. H.	Red Springs
Hoggard, J. T.	Wilmington
Hoggard, Wm. A.	Rt. 3, Hertford
Hollar, O. L.	Hickory
*Hollingsworth, E. M.	Mt. Airy
*Hollingsworth, E. T.	Clinton
Hollingsworth, R. E.	Mt. Airy
*Holloway, O. W.	Durham
*Holloway, Robt. L.	West Durham
*Hollyday, W. M.	Asheville
*Holt, D. W.	Revolution Sta., Greensboro
Holt, E. E.	Southern Pines
Holt, R. D.	Cherokee
Holt, T. J.	Warrenton
*Holt, Wm. P.	Duke
Holt, Wm. T.	McLeansville
Honnet, Jos. P.	Wilmington
Hood, J. Sidney	Kings Mountain
Hooks, Thel	Smithfield
Hooper, D. D.	Sylva
Hooper, Jos. W.	Wilmington
Hoover, C. H.	Denver
Hoover, H. R.	Black Creek
Horsley, H. T.	Franklin
*Horton, M. C.	Raleigh
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Houck, Albert F.	Lenoir
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Houser, W. H.	Cherryville
Hovis, L. W.	Charlotte
Howe, Wm. B. W., Jr.	Hendersonville
Howell, W. L.	Ellerbee
Hoyle, Hugh B.	Manteo
Hubbard, Charles C.	Farmer
Hughes, F. W., (Hon.)	New Bern
Hunnicutt, Wm. J.	Asheville
Hunsucker, Chas. L.	Hickory
Hunt, J. F.	Casar
Hunter, J. P.	Cary
Hunter, J. V.	Asheboro
Hunter, L. W. (Hon.)	Rt. 1, Charlotte
Hunter, M. C.	Huntersville
*Hunter, Myers	Charlotte
Hunter, N. C.	Laurinburg
Hunter, W. B.	Gastonia
*Hurdle, S. W.	Winston-Salem
Huston, Jno. W.	Asheville
*Hutchins, E. M.	North Wilkesboro
Hutchinson, S. S.	Bladenboro
Hyatt, A. L.	Kinston
Hyatt, Fred C.	Greensboro
Ingram, Charles B.	Mt. Gilead
Irwin, Hammer C.	Pocatella, Idaho
*Irwin, Henderson	Goldsboro
*Irwin, J. R. (Hon.)	Charlotte
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Ivey, H. B.	Goldsboro
Ivey, R. R.	Biltmore
*Izlar, H. L.	Winston-Salem
Jackson, C. C.	Yeatesville
*Jackson, Walter Leo	High Point
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James, Albert W.	Hamlet
James, F. P.	Laurinburg
James, W. D.	Hamlet
*Jarboe, Parron	Greensboro
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Jerome, James R.	Wingate
Jett, Samuel G.	Reidsville
Jewett, Robt. D. (Hon.)	Wilmington
John, Peter	Laurinburg
Johnson, B. C.	Bunn
Johnson, C. T.	Red Springs
Johnson, Floyd	Whiteville
Johnson, Geo. W.	Wilmington
Johnson, Henry H.	Louisburg
Johnson, John B.	Old Fort
*Johnson, Norman M. (Hon.)	Durham
Johnson, R. Lee	Gastonia
Johnson, Robert W.	Apex
*Johnson, Thos. C.	Lumberton
Johnson, W. A.	R. F. D., Reidsville
Johnson, W. C.	Canton
*Johnson, Wingate M.	Winston-Salem
Johnston, J. G.	Charlotte
Johnston, R. H.	Wilson
*Johnston, W. W.	Winston-Salem
Jonas, John F.	Marion
*Jones, A. G.	Walnut Cove
*Jones, Beverley N.	Winston-Salem
Jones, Clara E.	Goldsboro
*Jones, C. M.	Grimesland
Jones, E. E.	Elm City
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Jones, T. Lester	Lansing
*Jones, J. Walter	Boone
*Jones, R. Duval	New Bern
*Jones, W. M., Jr.	Greensboro
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*Jordan, Wm. S.	Fayetteville
*Joyner, James C.	Burlington
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Justice, L. H.	Littleton
*Justice Z. K.	Davidson
*Kapp, Henry Herman	Winston-Salem
*Keiger, James A.	Greensboro
*Keiger, O. R.	Winston-Salem
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*Kendrick, R. L.	Elizabeth City
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*Kent, Alfred A.	Lenoir
Kerns, T. C.	Durham
Kernodle, Charles E.	Elon College
Kerr, John D.	Clinton
Kibler, James Edwin	Winston-Salem
Kibler, W. H.	Morganton
Killian, P. B.	Hayesville
Killian, R. B.	Lincolnton
Killinger, R. R.	Rocky Mount
King, Edward	Asheville
King, Parks M.	Charlotte
King, Richard M.	Concord
Kinsman, Henry F.	Hamlet
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Kirk, W. R.	Hendersonville
Kiser, W. C.	Reepsville
Kitchin, Thurman D.	Wake Forest
Klutz, A. F.	Maiden
Klutz, P. J.	Maiden
*Kluttz, Dewitt	Washington
Knight, J. B. H. (Hon.)	Williamston
Knight, Wm. P.	Greensboro
Knoefal, A. E.	Black Mountain
Knowles, D. L.	Rocky Mount
Knox, A. W. (Hon.)	Raleigh
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Kornegay, Geo. E.	Kinston
Kornegay, Lemuel W.	Rocky Mount
Lackey, F. H.	Fallston
Lafferty, Robert H.	Charlotte
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Landen, Jefferson F.	Chinquapin
Lane, John L.	Rocky Mount
Lane, M. E.	Pinetops
Lane, P. P.	Wilson
Lapham, Mary E.	Highlands
Larkin, E. W.	Fayetteville
Large, H. Lee	Rocky Mount
Lassiter, C. L.	Fremont
Lassiter, H. G.	Weldon
*Laton, Jas. F.	Albemarle
Lattimore, E. B.	Shelby
*Lawrence, B. J.	Raleigh
*Lawrence, Chas. S.	Winston-Salem
Lawson, R. B.	Chapel Hill
Laughinghouse, Chas. O'H.	Greenville
*Leak, Wharton G.	East Bend
Ledbetter, James McQ.	Rockingham
Lee, L. V.	Lattimore

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Lee, R. E.	Lincolnton
Lee, S. J. P.	Benson
Leggett, Kenelm (Hon.)	Hobgood
Leggett, V. W.	Hobgood
Legwin, Jno. B.	Wilmington
Leinbach, Robt. F.	Charlotte
Lentz, C. M.	Albemarle
Lewis, Geo. W.	Wilson
Lewis, H. W. (Hon.)	Jackson
Lewis, R. H. (Hon.)	Raleigh
Lilly, Jas. M.	Fayetteville
Linney, R. Z.	Charlotte
Linville, A. Y.	Winston-Salem
Lister, E. W.	Weeksville
Lister, J. L.	Jackson
Little, R. E.	Statesville
Livingston, A. E.	Gibson
Lloyd, B. B.	Chapel Hill
Locke, Eva M.	Greensboro
Lockett, E. A.	Winston-Salem
Loftin, P. B.	Beaufort
Logan, F. W. F.	Rutherfordton
Long, B. L.	Glen Alpine
Long, B. L. (Hon.)	Hamilton
Long, D. T.	Hurdle Mills
Long, E. M.	Hamilton
Long, E. F.	Raleigh
Long, F. Y.	Catawba
Long, Glenn	Newton
Long, H. F.	Statesville
Long, J. W. (Hon.)	Greensboro
Long, Roy C.	Asheville
Long, T. W. M.	Roanoke Rapids
Long, V. McK.	Winston-Salem
Long, Walter T.	Roxboro
Looney, J. J. W.	Rocky Mount
Lord, Marjery J.	Asheville
Lott, H. S.	Winston-Salem
Love, Bedford E.	Roxboro
Love, W. J. (Hon.)	Wilmington
Love, Wm. W.	Unionville
Lovelace, T. C.	Henrietta
Lovill, Robt. J.	Mt. Airy
Lowery, John R.	Raleigh
Lubchenko, N. E.	Harrisburg
Lutterloh, I. H.	Sanford
Lyday, Abram E.	Penrose
Lyday, C. E.	Gastonia
Lyday, Wm. M.	Brevard
Lyle, S. H.	Franklin
Lynch, J. M.	Asheville
Lyon, B. R.	Greensboro
Lyon, E. H.	Bahama
Lyons, Henry W.	Windsor
MacConnell, John W.	Davidson
MacNider, Wm. DeB.	Chapel Hill
MacRae, J. D.	Asheville
MacPherson, G. S.	Asheville
MacRae, Neal	Littleton
Macon, G. H.	Warrenton
Macfadyen, Paul R.	Concord
McAdams, C. R.	Belmont
McAnally, Wm. J.	High Point
McBrayer, L. B.	Sanatorium
McBrayer, R.	Sanatorium
McBryde, M. H.	Reidsville
McCain, Hugh W.	High Point
McCain, P. P.	Sanatorium
McCain, W. R.	Waxhaw
McCall, A. C.	Asheville
McCampbell, John	Morganton
McCanless, Wm. V.	Danbury
McClees, Ed. C.	Elm City
McClees, Jas. E.	Pinetown
McClelland, Jos. O.	Maxton
McCombs, C. J.	Gastonia
McCorkle, M. L.	Newton
McCotter, St. Elmo	Bayboro
McCoy, Thos. M.	Mt. Holly
McCracken, C. M.	Fairview
McCracken, J. R.	Waynesville
McCuiston, A. M.	Richlands
McCullers, Jas. J. L.	McCullers
McDade, B. B.	Rt. 1, Corbett
McDaniels, L. E.	Lasker
McDonald, A. D. (Hon.)	Wilmington
McDonald, A. A.	Jackson Springs
McDuffie, W. N.	Hemp
McElwee, Ross S.	Statesville
McFadyen, O. L.	Fayetteville
McGeachy, R. S.	Raleigh
McGee, Jas. W. (Hon.)	Raleigh
McGehee, John W.	Reidsville
McGougan, J. V.	Fayetteville
McGowan, Claudius	Plymouth
McIntosh, D. M.	Old Fort
McIntosh, L. C.	Henderson

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McIntosh, W. R.	Roberdell
*McIvor, E. M.	Jonesboro
*McIvor, Lynn	Sanford
McKay, Hamilton W.	Charlotte
McKay, Jos. F.	Buies Creek
McKay, W. P.	Red Springs
McKee, John S.	Raleigh
*McKenzie, B. W.	Salisbury
*McKenzie, Wm. W.	Salisbury
McKethan, D. G.	Fayetteville
McKethan, Jno. A.	Fayetteville
*McLaughlin, Calvin S.	Charlotte
McLaughlin, J. E.	Statesville
McLean, Allen	Wagram
McLean, Chas. Erwin	Gastonia
McLean, Jno. W.	Godwin
McLean, Peter	Laurinburg
McLemore, Geo. A.	R. F. D., Clayton
McLeod, A. H.	Aberdeen
McLeod, Gilbert M.	Carthage
McManus, W. L.	Greensboro
McMillan, Benj. F. (Hon.)	Red Springs
McMillan, J. D. (Hon.)	Edenton
McMillan, J. M.	Candor
McMillan, Roscoe D.	Red Springs
McMillan, W. D. (Hon.)	Wilmington
McNairy, Caroline	Lenoir
*McNairy, C. Banks	Kinston
McNeill, Jas. Wm. (Hon.)	Fayetteville
McPhail, L. D.	Rockingham
*McPherson, C. W.	Burlington
McPherson, R. G.	Saxapahaw
*McPherson, S. D.	Durham
Mallett, E. P.	Hendersonville
Malloy, S. A.	Yanceyville
Malone, James E.	Louisburg
Maness, J. M.	Ellerbe
Mangum, C. P.	Kinston
Mann, S. M.	Moyock
Manning, I. H.	Chapel Hill
*Manning, John H. (Hon.)	Durham
Mariner, N. B.	Belhaven
Marlowe, W. A.	Walstonburg
Marr, M. W.	Pinehurst
Marriott, Henry B.	Battleboro
*Marsh, Frank B.	Salisbury
Martin, J. A.	Lumberton
Martin, J. F.	Benson
Martin, J. H.	R. F. D., Battleboro
Martin, J. W.	Roanoke Rapids
Martin, L. P.	Gastonia
*Martin, Moir S.	Mt. Airy
*Martin, Richard E.	East Bend
*Martin, Sydnor L.	Leaksville
*Martin, W. C.	Mocksville
Martin, W. J.	Davidson
*Matheson, James P.	Charlotte
Mathews, Vann M.	Charlotte
Matthews, James O.	R. F. D., Clinton
*Matthews, M. L.	Sanford
Matthews, Thos. A.	Castalia
Matthews, Wm. W.	Spray
Maxwell, C. S.	Beaufort
Maxwell, J. F.	Pink Hill
Mayerberg, I. W.	Selma
Meadows, Elijah B.	R. F. D Oxford
*Meadows, W. J.	Greensboro
Mebane, W. C.	Wilmington
Melvin, Wayman C.	Linden
Menzies, H. C.	Hickory
Meroney, B. B.	Murphy
Merritt, Jno. H.	Rt. 2, Woodsdale
Michaux, Edward R.	Greensboro
Milbee, R. O.	Cove City
Miles, May S.	Greensboro
Miller, J. F.	Wilmington
*Miller, Oscar L.	Gastonia
Miller, Robert B.	Goldsboro
Miller, R. C.	Cramerton
Milliken, J. S.	Southern Pines
Mills, C. H. C.	Charlotte
Mimms, C. W.	Winston-Salem
Minor, Charles L.	Asheville
*Misenheimer, Chas. A. (Hon.)	Charlotte
Mitchell, Geo. W.	Wilson
Mitchell, Jesse H.	Ahoskie
Mitchell, Paul H.	Ahoskie
Mitchell, W. F.	Shelby
Mitchell, Z. P.	Colerain
Mitchener, J. S.	Raleigh
*Mock, Frank Lowe	Rt. 3, Lexington
*Monk, Henry L.	Salisbury
*Monroe, J. P.	Sanford
*Monroe, W. A. (Hon.)	Sanford
Montague, S. J.	Durham
*Montgomery, Harry M.	Burlington
*Montgomery, John C.	Charlotte
Montgomery, K. E.	Waynesville

Name	*Address*
Moore, Alexander W.	Charlotte
Moore, B. D.	Mt. Holly
Moore, Baxter S.	Charlotte
Moore, Charles E.	Greensboro
Moore, Chas. E. (Hon.)	Wilson
Moore, D. Bain	Badin
Moore, Edwin G. (Hon.)	Elm City
Moore, J. E.	Mt. Olive
Moore, Julian A.	Wilmington
Moore, K. C.	Wilson
*Moore, Oren	Charlotte
*Moore, R. A.	Winston-Salem
Moore, T. V.	Acme
Moore, W. B.	Brown Summit
Moore, Wm. H.	Wilmington
Moore, Wm. James	Asheboro
*Moorefield, R. H.	Rt. 1, Westfield
Moorefield, T. L.	Mt. Airy
Morehead, R. P.	Weldon
Morgan, B. E.	Asheville
Morrill, D. S.	Farmville
Morrill, Jenness	Falkland
Morris, Geo. B.	Mt. Olive
Morris, Jos. A.	R. F. D., Oxford
Morrow, Wm. C.	Andrews
Morton, J. X.	Faison
Morton, N. D.	Norlina
*Moseley, Charles W.	Greensboro
Moseley, H. P.	Farmville
Moseley, Z. V.	Kinston
Moser, W. D.	Burlington
Mudgett, W. C.	Southern Pines
*Munt, H. F.	Winston-Salem
*Munroe, J. P. (Hon.)	Charlotte
Murphy, John G.	Wilmington
Murphy, W. B.	Snow Hill
*Myers, Alonzo	Charlotte
*Myers, John Q.	Charlotte
Myers, R. W.	Rt. 1, Fullers
Nalle, B. C.	Charlotte
Nance, C. L.	Charlotte
Nance, Geo. B.	Monroe
Nash, J. Fred	St. Pauls
Neal, John W.	Monroe
Neal, Kemp. P.	Raleigh
Neal, Paul N.	Raleigh
Nelson, Robt. J. (Hon.)	Robersonville
Newbern, J. M.	Jarvisburg
Newby, G. E.	Hertford
Newell, H. A.	Henderson
Newell, J. O.	Louisburg
Newell, Leone B.	Charlotte
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Nichols, Alvon A.	Sylva
Nichols, Asbury S.	Sylva
Nichols, Austin F.	Roxboro
Nichols, Rhodes E.	Gorman
Nicholson, B. M.	Enfield
Nicholson, C. R.	Harmony
*Nicholson, Jno. L.	Washington
Nicholson, N. B., Jr.	Mt. Gilead
Nicholson, P. A. (Hon.)	Washington
*Nicholson, Sam T. (Hon.)	Washington
*Nisbet, D. Heath	Charlotte
Nisbet, Walter O.	Charlotte
Noble, R. J. (Hon.)	Selma
*Noble, R. P.	Raleigh
Nobles, Jos. E. (Hon.)	Greenville
*Noell, R. H.	Rocky Mount
Nolan, J. V.	Kannapolis
Norfleet, Edgar Powell	Roxobel
Norfleet, L. E.	Tarboro
Norman, J. S.	Boardman
Norman, Geo. W.	Pomona
*Norris, Henry	Rutherfordton
Norris, Phillip	Rutherfordton
Northington, J. M.	Charlotte
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O'Briant, A. L.	Cameron
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Olive, Wm. Wade	Durham
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Orr, Charles C.	Asheville
Orr, C. V.	Andrews
Orr, P. B.	Asheville
Orr, W. J. B.	Iaeger, W. Va.
Outland, C. L.	Woodland
Pace, K. B.	Greenville
Packard, F. S.	Norlina
Packard, G. H.	White Rock
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Page, B. W.	Wilmington
Palmer, B. H.	Shelby
Palmer, Monroe	Hollister

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Palmer, R. W.	Gulf
Parker, Clifton G.	Woodland
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Parker, G. E.	Benson
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Parker, J. R.	Clinton
Parker, J. R.	Wilmington
Parker, O. L.	Clinton
Parker, Paul G.	Jackson
Parker, S. F.	Mt. Olive
Parker, Walter R.	Woodland
Parris, O. J.	Swepsonville
Parrott, Albert DeK.	Kinston
*Parrott, James M.	Kinston
Parrott, M. C.	Kinston
*Parrott, Wm. T.	Kinston
Parsons, W. H.	Charlotte
Patchin, D. F.	Rosemary
*Pate, F. J.	Greensboro
Pate, James G.	Gibson
Patrick, Geo. R., Jr.	Bessemer City
Patrick, J. E.	Seven Springs
Patrick, L. N.	Gastonia
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Patterson, Reid	Charlotte
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Peck, Edward J.	Hot Springs
Peck, W. A.	Ramseytown
*Peeler, Clarence N.	Charlotte
Peeler, John H.	Salisbury
Peery, Vance P.	Kinston
Peete, C. H.	Warrenton
Pegram, R. W. S.	Canton
Pemberton, Wm. D. (Hon.)	Concord
Pendleton, Wilson	Asheville
*Pepper, John Kerr	Winston-Salem
*Perkins, David R.	Marshville
*Perkins, J. R.	Winston-Salem
Perkins, S. L.	West Jefferson
*Perry, D. R.	Lexington
Perry, E. M.	Rocky Mount
Perry, H. B.	Valle Crucis
Perry, H. G.	Louisburg
Perry, Mark P. (Hon.)	Macon
Person, Edgar Cooper	Pikeville
Person, H. M.	Goldsboro
*Person, J. B.	Selma
Person, T. E.	Stantonsburg
Peters, W. A.	Elizabeth City
*Peterson, C. A.	Spruce Pine
Peterson, J. M.	Spruce Pine
Peterson, W. C.	Wilmington
*Petrie, Robert Wm.	Charlotte
*Pfohl, Samuel F.	Winston-Salem
Pharr, Theo. F. (Hon.)	Concord
Pharr, Wm. W. (Hon.)	Charlotte
Phifer, Edward M.	Morganton
Phillips, C. C.	Charlotte
*Phillips, C. H.	Thomasville
Phillips, J. J.	Raleigh
*Phillips, M. D.	Dalton
Pickett, Jno. A.	R. F. D., Burlington
Picot, L. J. (Hon.)	Littleton
Pierce, S. B.	Weldon
*Pittman, R. L.	Fayetteville
Pitts, W. I.	Lenoir
Pollard, W. B.	Winton
Pollock, Raymond	New Bern
Poole, Claud T.	St. Pauls
Pope, Henry T.	Lumberton
Powell, H. H.	Stantonsburg
Powell, Jesse A.	Harrellsville
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Pressley, Geo. W.	Charlotte
*Pressley, J. M.	Belmont
Price, H. L.	Fairmont
Price, K. A.	Hickory
Pritchard, Arthur T.	Asheville
Pritchard, Jno. L.	Windsor
*Proctor, I. M.	Raleigh
Pruitt, G. C.	Monroe
Pugh, Charles H.	Gastonia
Purdy, J. J.	Oriental
Purefoy, Geo. W. (Hon.)	Asheville
Putney, R. H.	Elm City
Query, Richard Z.	R. F. D., Charlotte
*Quickel, Thomas C.	Gastonia
Quillen, Emile B.	Rocky Mount
Quinn, Robert F.	Magnolia
Raby, J. G.	Tarboro
*Rainey, W. T.	Fayetteville
Ramseur, Geo. A.	China Grove
Rankin, Pressly R.	Mt. Gilead
Rankin, R. B.	Kannapolis
Rankin, S. W.	Concord
*Rankin, Watson S.	Raleigh

Name	*Address*
Ranson, J. Lester	Charlotte
Ray, F. L.	Charlotte
Ray, Hickman	Durham
Ray, John B.	Leaksville
Ray, O. L.	Rt. 1, Raleigh
Reaves, W. P.	Greensboro
Reece, James M.	Elkin
Redding, Alex. H.	Cedar Falls
Reed, D. H.	Morehead City
Reed, John F.	Concord
Reedy, Howard	Rowland
Reeves, A. F.	Asheville
Reeves, R. J.	Leicester
Redfern, T. C.	Winston-Salem
Register, F. M.	Raleigh
Reid, Geo. P.	Forest City
Reid, James W.	Lowell
Reid, Thomas N.	Matthews
Reitzel, Claude E.	High Point
Reynolds, C. V.	Asheville
Reynolds, T. F.	Canton
Rhodes, James S.	Williamston
Rhyne, Robert Edgar	Gastonia
Richardson, F. H.	Black Mountain
Ricks, Leonard E.	Fairmont
Riddle, J. B.	Morganton
Riddle, N. C.	Lillington
Riggsbee, A. E.	Morrisville
Ring, Joseph W.	Elkin
Ringer, Paul H.	Asheville
Roberson, Charles	Greensboro
Roberson, Foy	Durham
Roberson, Geo. B.	Greensboro
Roberts, Frank	Marshall
Roberts, H. C.	Coats
Robertson, James F.	Wilmington
Robinson, Frank	Lowell
Robinson, J. D.	Wallace
Robinson, Willard F.	Mars Hill
Robinson, W. J.	Creston
Rodgers, W. D., Jr.	Warrenton
Rodman, J. C.	Washington
Rodwell, John W.	Mocksville
Rogers, Jas. Rufus	Raleigh
Rogers, W. A.	Franklin
Root, Albert S.	Raleigh
Rose, A. H.	Smithfield
Ross, Geo. H.	E. Durham
Ross, Otho B.	Charlotte
Ross, Robert D.	Wadesboro
Rosser, R. G.	Vass
Rousseau, J. P.	Winston-Salem
Rowe, H. B.	Mt. Airy
Rowe, H. E.	Hickory
Rowe, R. H.	Hickory
Royal, Ben. F.	Morehead City
Royall, M. A.	Elkin
Royster, Hubert A.	Raleigh
Royster, S. S.	Shelby
Royster, Thomas H.	Tarboro
Royster, W. I. (Hon.)	Raleigh
Rozier, R. G.	St. Pauls
Rucker, Adin Adam	Uree
Ruff, Frank R.	Charlotte
Russell Jesse M.	Canton
Sadler, R. C.	Whiteville
Saine, J. W.	Lincolnton
Saliba, John	Elizabeth City
Saliba, Michael M.	Wilson
Salley, E. McQueen	Saluda
Salmons, H. C.	Jonesville
Salmons, L. R.	Winston-Salem
Sample, R. C.	Hendersonville
Saunders, Jos. H.	Williamston
Saunders, Sheldon A.	Aulander
Sawyer, Chas. J.	Windsor
Sawyer, W. W.	Elizabeth City
Schallert, P. O.	Winston-Salem
Schaub, O. P.	Winston-Salem
Schoenheit, E. W.	Asheville
Schonwald, John T. (Hon.)	Wilmington
Schoonover, R. A.	Greensboro
Schuler, J. E.	East Durham
Scott, Charles L.	Sanford
Scott, R. C.	Asheville
Scott, S. Floyd	Union Ridge
Scruggs, F. B.	Cliffside
Scruggs, W. Marion	Charlotte
Scruggs, W. H.	Asheville
Sessoms, E. T.	Autryville
Sevier, D. E.	Asheville
Sevier, J. T.	Asheville
Sexton, C. Hector	Dunn
Shafer, Irving E.	Salisbury
Shamburger, John B.	Star
Sharpe, C. R.	Lexington
Sharpe, F. A.	Greensboro

Name	*Address*
Shaver, W. T.	Badin
Shaw, Colin	Wilmington
Shaw, W. G.	Wagram
Shellum, O. W.	Lowesville
*Shepard, F. H.	Liberty
*Sherrill, C. L.	Statesville
Shields, Henry B.	Carthage
Shipp, Geo. W.	Newton
*Shirley, H. C.	Charlotte
*Shore, Clarence A.	Raleigh
*Shuford, Jacob Harrison	Hickory
Shull, J. Rush	Charlotte
*Sidbury, J. B.	Wilmington
Sigman, F. G.	Spencer
Sikes, G. T. (Hon.)	Creedmore
*Siler, Fred L.	Franklin
Simmons, John O.	Charlotte
*Simmonds, L. L.	Greensboro
Singletary, G. C.	Clarkton
*Sink, C. S.	North Wilkesboro
Siske, J. E. A.	Pleasant Garden
*Skinner, L. C. (Chadwick Sta.)	Charlotte
Skinner, Louis Cotton	Greenville
*Slate, John S.	Winston-Salem
Slate, Wesley C.	Spencer
*Sloan, D. B.	Wilmington
Sloan, H. L.	Charlotte
Sloan, James M.	Gastonia
Sloan, Wm. H.	Garland
Slocum, R. B.	Wilmington
Sloop, Eustace H.	Crossmore
Small, Victor R.	Raleigh
Smith, Alick T.	Greensboro
Smith, B. R.	Asheville
Smith, C. T.	Rocky Mount
Smith, G. A.	Black Creek
Smith, G. M.	Monroe
*Smith, J. A.	Lexington
*Smith, James B.	Pilot Mountain
Smith, James T.	Westfield
Smith, John McNeill	Rowland
Smith, Joseph	Greenville
Smith, Joseph Elmer	Windsor
*Smith, L. J.	Wilson
Smith, O. F.	Scotland Neck
*Smith, Owen	High Point
Smith, R. A. (Hon.)	Goldsboro
Smith, Robert W.	Hertford
Smith, Slade A.	Wilmington
Smith, W. F.	Chadbourn
Smith, Wm. H.	Goldsboro
Smithwick, James E.	Jamesville
Smoot, J. E.	Concord
*Smoot, Morris L.	Fayetteville
Snipes, E. P. (Hon.)	Jonesboro
Somers, L. P.	New Castle
Sossomon, J. C.	Midland
*Spainhour, Ellis H.	Winston-Salem
Speas, W. P.	Hickory
Speed, J. A.	Durham
Speight, J. A.	Rocky Mount
Speight, John W.	Roper
Speight, J. P.	Rocky Mount
Speight, R. H. (Hon.)	Whitakers
Spencer, Fred B.	Salisbury
*Spencer, Wm. O.	Winston-Salem
Spicer, John	Goldsboro
*Spicer, Richard W.	Goldsboro
Spicer, William	Goldsboro
Spoon, Charles E.	Graham
*Spoon, S. C.	Graham
Sprinkle, C. N.	Weaverville
*Spruill, Joseph L.	Sanatorium
Squires, Claude	Charlotte
*Staley, S. Walter	Rocky Mount
Stamps, Thos. (Hon.)	Lumber Bridge
Stancill, Wm. W.	Raleigh
Stanley, John H.	Four Oaks
*Stanton, D. A. (Hon.)	High Point
*Starr, H. F.	Greensboro
Stephens, W. L.	Shiloh
Sterrett, J. R.	West Durham
*Stevens, M. L.	Asheville
Stevens, R. S.	Princeton
Stevens, Samuel A.	Monroe
Stevenson, T. T.	Hickory
*Stewart, H. D.	Monroe
*Stewart, J. T.	R. F. D., Summerfield
Stockard, J. K.	Greensboro
Stokes, J. E.	Salisbury
Stokes, P. B.	Ruffin
*Stone, Grady E.	King
*Stone, Wesley M.	Dobson
Stoner, I. J.	West Durham
Storie, J. G.	Proctor
Street, M. E.	Glendon
*Strickland, Edward F.	Bethania
Strickland, Ernest L.	Wilson

Name	Address
Stringfellow, Jas. L.	Sunburst
*Stringfield, Samuel L.	Sunburst
Stringfield, Thomas	Waynesville
*Strong, Charles M.	Charlotte
*Strong, Wm. M.	Charlotte
Strosnider, Chas. F.	Goldsboro
Suiter, W. G.	Weldon
Summerell, E. M. (Hon.)	China Grove
Summerell, G. H.	Ayden
Summers, Charles L.	Baltimore, Md.
Summey, T. J.	Brevard
Sumner, Thomas W.	Fletcher
Sumner, Wm. I.	Randleman
Surles, J. B.	Four Oaks
Sutton, Carl W.	Richlands
Sutton, William G.	Seven Springs
Swann, Jos. F.	Semora
Sweaney, H. M.	Durham
Sweaney, John	West Durham
Swindell, C. L.	Beaufort
*Swindell, Lewis H.	Washington
Sykes, Gibson L.	Salemburg
Tally, B. F.	Elizabethtown
*Tally, J. S.	Troutman
*Tankersley, J. W.	Greensboro
*Tate, C. S.	Ramseur
Tate, W. C.	Banner Elk
*Tatum, Roy C.	Statesville
Tayloe, D. T. (Hon.)	Washington
*Tayloe, D. T., Jr.	Washington
Tayloe, Joshua	Washington
*Taylor, F. R.	High Point
Taylor, G. W.	Mooresville
Taylor, H C. (Chadwick Sta.)	Charlotte
Taylor, James N.	Burlington
*Taylor, James T.	Madison
Taylor, T. G.	Leaksville
Taylor, W. I.	Burgaw
Taylor, Wm. L.	Stovall
Taylor, William S.	Mt. Airy
*Templeton, James M.	Cary
Tennent, G. S.	Asheville
*Terry, J. R.	Lexington
Terry, P. R.	Asheville
Terry, Wm. Calvin	Hamlet
Thacker, J. H.	Reidsville
Thaxton, B. A.	Roxboro
Thigpen, H. G.	Scotland Neck
Thigpen, William J.	Tarboro
*Thomas, J. G.	Greensboro
*Thomas, W. Clyde	Siler City
*Thomas, Wm. N.	Oxford
Thompson, A. C.	Asheville
Thompson, Alexander F.	Troy
*Thompson, C. D.	Lexington
*Thompson, Cyrus	Jacksonville
*Thompson, Edgar S.	Winston-Salem
Thompson, Fred	Pine Bluff
Thompson, Hugh A.	Raleigh
Thompson, Joseph	Creedmore
Thompson, J. Mel	Mebane
*Thompson, Neill A.	Lumberton
*Thompson, S. R.	Charlotte
Thompson, S. W.	Wake Forest
*Thompson, S. W., Jr.	Wake Forest
Thompson, W. A.	Rutherfordton
Tidmarsh, H. W.	Whittier
Tidwell, J. E.	Andrews
*Tillotson, R. F.	King
Tilson, Jacob C.	Marshall
Timberlake, C. V.	Youngsville
Timberlake, Richard E.	Youngsville
*Todd, L. C.	Charlotte
Toole, A. F.	Asheville
*Townsend, M. L.	Charlotte
Trantham, H. T. (Hon.)	Salisbury
Triplett, W. R.	Purlear
*Troxler, R. M.	Burlington
Tucker, John H.	Charlotte
Tugman, B. W.	Warrensville
Tull, Henry (Hon.)	Kinston
Turlington, H. C.	Dunn
Turner, J. M.	North Wilkesboro
Turner, J. P.	Greensboro
*Tuttle, A. F.	Spray
*Tuttle, Reuben G.	Walnut Cove
Twitty, John C.	Rutherfordton
Tydeman, F. W. L.	Wood River, Ill.
*Tyner, Carl V.	Smithfield
Tyson, T. D.	Mebane
Upchurch, C. G.	Moncure
Upchurch, Robert T.	Henderson
*Underwood, O. E.	Roseboro
Utley, H. H.	Benson
*Valk, A. deT.	Winston-Salem

Name	*Address*
Vann, J. R., Jr.	Fayetteville
*Van Poole, C. M. (Hon.)	Salisbury
Vaughan, J. C.	Rich Square
Verdery, W. C.	Fayetteville
*Vernon, James W.	Morganton
*Vestal, Willis Jasper	Lexington
Vick, Geo. D.	Selma
Von Ruck, Karl (Hon.)	Asheville
*Wadsworth, William H.	Concord
Wakefield, Harry A.	Charlotte
Walker, H. D.	Elizabeth City
Walker, J. B.	Gibsonville
Walker, L. A.	Burlington
Walker, L. D.	Charlotte
Walker, L. K.	Ahoskie
*Walker, Walter Erwin	Burlington
*Walters, Charles Manly	Burlington
Ward, Jesse E.	Robersonville
*Ward, John LaB.	Asheville
Ward, Vernon A.	Robersonville
Ward, William H. (Hon.)	Plymouth
Warren, A. J.	Charlotte
Warren, R. F.	Prospect Hill
Warren, R. L.	Dunn
Warren, Wm. E.	Williamston
Watkins, Finso B.	Morganton
Watkins, Geo. S.	Oxford
Watkins, G. T.	Durham
Watson, John B.	Raleigh
Watson, Leon	Broadway
*Watson, Thomas M.	Maxton
*Way, J. Howell (Hon.)	Waynesville
Weathers, Bahnson	Wilmington
Weaver, Henry B. (Hon.)	Asheville
Weaver, W. J.	Asheville
Webb, B. G.	Andrews
Webb, S. Edgar	Draper
*Wellborn, William R.	Elkin
Wessell, John C.	Wilmington
West, C. F.	Kinston
West, George H.	Fairmont
*West, Louis N.	Raleigh
West, Robert M.	Salisbury
*West, T. M.	Fayetteville
Weyher, V. E.	Kinston
Wharton, Chas. R.	Ruffin
Wharton, L. D.	Smithfield
*Wheeler, J. H.	Henderson
Wheless, J. R.	Spring Hope
Whelpley, Frank L.	Goldsboro
Whitted, W. P.	Eureka
Whichard, M. P.	Edenton
Whisnant, Albert M.	Charlotte
*Whitaker, A. C.	Julian
Whitaker, F. C.	Enfield
*Whitaker, Frederick S.	Kinston
Whitaker, R. A. (Hon.)	Kinston
Whitaker, R. B.	Whiteville
White, John W. (Hon.)	Wilkesboro
White, R. A.	Asheville
White, W. M.	Lenoir
Whitehead, John (Hon.)	Salisbury
Whitehead, J. P.	Rocky Mount
Whitehurst, E. B.	Marshallberg
Whitfield, Wm. Cobb (Hon.)	Grifton
Whitley, A. D. N.	Unionville
*Whittington, James B.	Winston-Salem
Whittington, W. P. (Hon.)	Asheville
Whittington, Wm. W.	Snow Hill
*Wiggins, J. C.	Winston-Salem
Wilcox, J. W.	Laurel Hill
Wilkes, Grover C.	Sylva
Wilkerson, Chas. B.	Raleigh
*Wilkerson, Chas. E.	Randleman
Wilkerson, T. E.	Raleigh
*Wilkins, J. C.	Haw River
Wilkins, J. W.	Mount Olive
Wilkins, R. B.	Raeford
Wilkins, Samuel A.	Dallas
Williams, Alfred F.	Wilson
Williams, B. B.	Greensboro
Williams, Claude B.	Elizabeth City
Williams, Edward J.	Monroe
Williams, James Marcus	Warsaw
Williams, J. H.	Claremont
*Williams, John A.	Greensboro
*Williams, John D.	Guilford Station
Williams, John W.	Washington
*Williams, Lester L.	Mt. Airy
Williams, L. P.	Wilmington
Williams, R. C.	Wallace
Willis, A. P.	Candler
*Willis, B. C.	Rocky Mount
*Wilson, Albert R. (Hon.)	Greensboro
Wilson, Clarence L.	Lenoir
Wilson, R. G.	Asheville
Wilson, Robert B.	Newton Grove

Name	*Address*
*Wilson, W. P.	Madison
Wimberly, G. L.	Rocky Mount
Wingate, G. C.	Charlotte
Winstead, J. A.	Nashville
Wishart, Wm. E.	Charlotte
*Witherspoon, B. J.	Charlotte
Woodley, C. B.	Kinston
*Wolfe, H. C.	Greensboro
*Wolff, D. R.	Greensboro
*Woltz, John L.	Mt. Airy
*Wood, E. J.	Wilmington
Wood, J. W.	Rt. 3, Shelby
Woodard, A. G.	Goldsboro
Woodard, C. A.	Wilson
Woodard, E. D.	Bayboro
*Woodard, G. B.	Kenly
*Woodruff, Fred G.	High Point
*Woodson, Charles W.	Salisbury
Wooten, Amos Monroe	Pinetops
*Worthington, F. D.	Charlotte
*Wright, J. B.	Raleigh
Wright, Thomas H.	Charlotte
*Wyatt, Wortham	Winston-Salem
Wyson, H. C.	Wilmington
Yarborough, R. F.	Louisburg
*Yokeley, Raymond V.	Thomasville
York, A. A.	Southmont
York, Hugh B.	Williamston
*York, N. D.	Mebane
Young, G. M.	Postell
Young, J. J.	Clayton
Young, L. B.	Rt. 3, Wake Forest
*Yow, I. A.	Georgeville
Zollicoffer, Augustus R.	Weldon
Zollicoffer, D. B.	Weldon
*Zimmerman, Robert U.	Rt. 4, Lexington

ROSTER OF MEMBERS FOR 1922

BY COUNTIES

NOTE.—Every physician in the State whose name we could secure has had an opportunity to supply correct information as to his name, postoffice, academic and medical education, date of State License and date State Society was joined. A few did not take advantage of the opportunity, however. Anyone finding an error should report it to the secretary of the society.

ALAMANCE COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President, John R. Parker, Burlington, Univ. Coll. of Med., Richmond, 1901	1901	1917
Secretary, R. M. Troxler, Burlington, Univ. of Md., 1914	1914	1915
Anderson, C. A., Burlington, P. and S., Balt., 1901	1893	1896
Brooks, R. E., Burlington, Jeff. Med. Coll., 1919	.....	1922
Caddell, S. W., Elon College, Univ. of Tenn., 1892	1892	1914
Faucett, T. S., Burlington, Balt. M. C., 1892	1893	1900
Freeman, R. N., Burlington, (Hon.), Wash. Univ., 1870	1879	1891
Goley, Wm. Rankin, Graham, P. and S., Balt., 1885	1885	1893
Harden, G., Burlington, Univ. of Pa., 1919	1920	1922
Isley, W. L., Burlington, Rt. 1, Univ. of Tenn., 1899	1899	1922
Joyner, J. C., Burlington, Univ. of Md., 1918	1919	1920
Kernodle, C. E., Elon College, Univ. of Md., 1911	1911	1920
McDade, B. B., Corbett, Rt. 1, Univ. of Md., 1918	1918	1920
McPherson, C. W., Burlington, Univ. of Md., 1910	1910	1912
McPherson, R. G., Saxapahaw, Univ. of N. C., 1908	1908	1909
Montgomery, H. M., Burlington, N. C. Med Coll., 1903	1903	1904
Moser, W. D., Burlington, Univ. of N. C., 1910	1910	1910
Parris, O. J., Swepsonville, Univ. of Md., 1897	1897	1904
Pickett, John A., Burlington, R. F. D., Univ. of Nashville, 1894	1894	1904
Scott, S. F., Union Ridge, Univ. of Pa., 1918	1918	1920
Spoon, C. E., Graham, Univ. of Tenn., 1907	1914	1920
Spoon, S. C., Graham, Univ. of Md., 1918	1918	1920
Taylor, J. N., Burlington, Med. Coll. of Va., 1901	1901	1905
Thompson, J. Mel., Mebane, Univ. of N. C., 1909	1909	1920
Tyson, T. D., Mebane, Univ. Coll. of Va., 1899	1899	1904
Walker, L. A., Burlington, Univ. Coll. of Med., Va., 1898	1899	1905
Walker, W. E., Burlington, Med. Coll. of Va., 1903	1903	1905
Walters, C. M., Burlington, P. and S., Balt., 1908	1908	1909
Warren, R. F., Prospect Hill, Atlanta School of Med., 1911	1911	1919
Wilkins, J. C., Haw River, Univ. of Md., 1911	1911	1920
York, N. D., Mebane, Louisville Med. Coll., 1878	1878	1885

ANSON COUNTY SOCIETY

President,	.....	.....
Secretary,	.....	.....
Allen, Chas. I., Wadesboro, Univ. of N. Y., 1913	1913	1922
Covington, J. M., Wadesboro, (Hon), Med. Coll. of S. C., 1873	1879	1879
Ross, Robert D., Wadesboro, Univ. of N. Y., 1890	1890	1912

ASHE COUNTY SOCIETY

Name and Address	Licensed	Joined State Society
President,		
Secretary,		
Blevins, Manly, West Jefferson, P. and S., Balt., 1885	1885	1904
Brooks, Hugh M., West Jefferson		1919
Eller, C. R., Theta		1917
Hagaman, J. B., Todd, Lincoln Mem. Univ., 1915	1915	1915
Jones, T. J., Lansing, Lincoln Mem. Univ., 1895		1885
Jones, T. L., Lansing, Med. Coll. of Va., 1909	1909	1917
Perkins, S. L., West Jefferson, Balt. Med. Coll., 1891	1892	1917
Robinson, W. J., Creston, Univ. of Kansas City, 1904	1907	1917
Tugman, B. W., Warrensville		1917

AVERY COUNTY SOCIETY

President, W. C. Tate, Banner Elk, Tenn. Med. Coll., 1908	1909	1912
Secretary, W. B. Burleson, Plumtree, Univ. of Md. and Coll. of P. and S., Balt., 1915	1915	1915
Hodges, Joseph M., Cranberry, Univ. of Md., 1904	1906	1914
Sloop, E. H., Crossnore, N. C. Med. Coll., 1905, Jeff., 1908	1905	1909

BEAUFORT COUNTY SOCIETY

President, J. W. Williams, Washington, Univ. of Md., 1906	1906	1906
Secretary, L. H. Swindell, Washington, Univ. of Pa., 1916	1916	1919
Bonner, J. B., Aurora, Univ. of Md., 1918	1918	1920
Carter, H. W., Washington, Univ. of Va., 1895	1895	1910
Jackson, C. C., Yeatesville, P. and S., Balt., 1893	1893	1893
Kluttz, Dewitt, Washington, Univ. of Pa., 1918	1919	1920
McClees, J. E., Pinetown, Med. Coll. of Va., 1916	1919	1920
Nicholson, J. L., Washington, Univ. of N. Y., 1875	1880	1904
Nicholson, P. A., Washington, (Hon.), P. and S., Balt., 1889	1889	1890
Nicholson, S. T., Washington, (Hon.), P. and S., Balt., 1881	1885	1885
Rodman, J. C., Washington, Bellevue Med. Coll., 1892	1892	1895
Tayloe, D. T., Washington, (Hon.), Bellevue, 1885	1885	1885
Tayloe, D. T., Jr., Washington, Univ. of Pa., 1919	1919	1922
Tayloe, Joshua, Washington, Bellevue Med. Coll., 1892	1892	1904

BERTIE COUNTY SOCIETY

President, H. W. Lyon, Windsor, Univ. of Pa., 1918	1919	1920
Secretary, E. P. Norfleet, Roxobel, Med. Coll. of Va., 1914	1914	1920
Benthall, R. F., Aulander, Med. Coll. of Va., 1917	1917	1920
Capehart, A., Roxobel, Univ. and Bellevue, 1887	1887	1905
Evans, L. B., Windsor, Med. Coll. of Va., 1900	1900	1907
Garriss, F. H., Lewiston, Jeff. Med. Coll., 1912	1912	1918
Jenkins, P. C., Roxobel, Univ. and Bellevue, 1873	1885	1905
Mitchell, Z. P., Colerain, Med. Coll. of Va., 1920	1920	1921
Pritchard, J. L., Windsor, P. and S., Balt., 1906	1906	1908

Name and Address	*Licensed*	*Joined State Society*
Saunders, S. A., Aulander, Jeff. Med. Coll., 1914	1914	1918
Sawyer, C. J., Windsor, P. and S., Balt., 1895	1895	1897
Smith, Joseph E., Windsor, Med. Coll. of Va., 1920	1921	1922

BLADEN COUNTY SOCIETY

President,	.....	.....
Secretary, E. S. Clark, Clarkton, Med. Coll. of Va., 1914	1914	1915
Bullard, G. F., Elizabethtown, N. C. Med. Coll., 1915	1915	1916
Clark, D. D., Clarkton, Med. Coll. of Va., 1917	1917	1920
Clark, G. L., Clarkton, (Hon.), Univ. of N. Y., 1876	1885	1892
Hutchinson, S. S., Bladenboro, N. C. Med. Coll., 1900	1911	1917
Singletary, G. C., Clarkton, Univ. of Pa., 1917	1917	1918
Tally, B. F., Elizabethtown	.....	1922

BRUNSWICK COUNTY SOCIETY

President,	.....	.....
Secretary,	.....	.....
Goley, Wm. R., Shallotte, Univ. Coll. of Med., 1901	1901	1904

BUNCOMBE COUNTY SOCIETY

President, A. T. Pritchard, Asheville, Jeff. Med. Coll., 1905	1905	1907
Secretary, A. F. Toole, Asheville, Univ. of Va., 1900	1917	1918
Adams, J. L., Asheville, Jeff. Med. Coll. 1910	1910	1913
Alexander, Geo., Asheville, Univ. of Ky., 1913	1920	1921
Ambler, Arthur C., Asheville, Jeff. Med. Coll., 1920	1921	1921
Ambler, C. P., Asheville, (Hon.) West. Reserve Univ., 1889	1890	1891
Anderson, J. G., Asheville, Univ. of N. C., 1906	1906	1910
Archer, I. J., Black Mountain, Northwestern Univ., 1896	1905	1907
Baker, W. E., Arden, Chattanooga Med. Coll., 1908	1915	1916
Battle, S. W., Charlotte, (Hon.) Bellevue N. Y. 1875	1887	1887
Beall, L. G., Asheville, N. C. Med. Coll., 1906, U. of Pa., 1911	1906	1912
Beers, Chas., Asheville Med. Coll. of Ohio, 1896	1918	1920
Bisch, L. E., Asheville, Columbia Coll. of P. and S., 1911	1919	1919
Bown, H. H., Asheville, Columbus, O., Med. Coll., 1892	1917	1918
Briggs, H. H., Asheville, Yale Univ. Sch. of Med., 1897	1901	1903
Brookshire, H. G., Asheville, N. C., Med. Coll., 1905	1905	1907
Brownson, Wm. C., Asheville, Univ. of N. Y., 1878	1885	1885
Buckner, J. M., Swannanoa, Univ. of N. C., 1908	1909	1912
Buckner, R. G., Asheville, Univ. of Ark., 1897	1907	1909
Calloway, A. W., Asheville, Chicago & Harvard Med., 1895	1899	1904
Cheadle, C. M., Asheville, Keokuk Med. Coll., 1898	1919	1921
Cheesborough, T. P., Asheville, Univ. of N. Y., 1891	1891	1900
Cocke, C. H., Asheville, Cornell Univ., 1905	1912	1913
Cocke, E. R., Asheville, Jeff. Med., 1913	1914	1917
Cocke, Jere E., Asheville, Louisville Med. Coll., 1905	1905	1907

Name and Address	Licensed	Joined State Society
Colby, C. De W., Asheville, U. of Mich., 1893	1909	1912
Cotten, Clyde E., Asheville, Northwestern, 1889	1901	1901
Denchfield, A. L., Asheville, Univ. and Bellevue, 1905	1914	1916
Dunn, Wm. L., Asheville, Univ. of Mich., 1891	1900	1900
Eckel, O. F., Asheville, Med. Coll. of S. C., 1906	1907	1909
Edwards, B. O., Asheville, N. C. Med. Coll., 1905	1905	1909
Edwards, C. P., Asheville, Tenn. Med. Coll., 1900	1903	1921
Elias, L. W., Asheville, Columbia Univ., 1903	1906	1907
Everetts, J. J., Asheville, Atlanta School of Med., 1912	1920	1921
Flack, R. E., Asheville, Johns Hopkins Univ., 1913	1913	1914
Fletcher, M. H., Asheville, (Hon.) Bellevue Med., 1881	1881	1882
Frazer, H. T., Asheville, Coll. of Phys., N. Y., 1901	1908	1909
Fresh, Wm. M., Weaverville, Medico-Chir. Coll., Pa., 1906	1913	1919
Gardner, G. D., Asheville, Lincoln Mem., 1908	1908	1909
Glenn, E. B., Asheville, Jeff. Med. Coll., 1896	1896	1900
Grantham, W. L., Asheville, N. C. Med. Coll., 1906	1906	1911
Green, Jos. B., Asheville, Univ. of Va., 1893	1910	1911
Greenwood, A. B., Asheville, Johns Hopkins, 1916	1916	1918
Griffin, M. A., Asheville, Jeff. Med. Coll., 1917	1917	1918
Griffin, W. R., Asheville, Jeff. Med. Coll., 1910	1910	1917
Griffith, F. W., Asheville, Johns Hopkins, 1906	1911	1912
Griffith, L. M., Asheville, Johns Hopkins, 1916	1916	1917
Harris, I. A., Alexander, Rt. 2, (Hon.) Jeff. Med. Coll.	1885	1904
Harrison, H. H., Asheville, Jeff. Med. Coll., 1905	1905	1918
Herbert, Wm. P., Asheville, Univ. of Va., 1907	1910	1911
Hipps, A. G. T., Asheville, Jeff. Med. Coll., 1916	1916	1920
Hollyday, W. M., Asheville, Univ. of Md., 1908	1914	1915
Hunnicutt, Wm. J., Asheville, Univ. of Tenn., 1895	1908	1909
Huston, J. W., Asheville, Rush, Chicago, 1904	1912	1913
Ivey, R. R., Biltmore, c/o U. S. P. H. S., Univ. of Ala., 1909		1921
Jordan, C. S., Asheville, Univ. of N. Y., 1890	1891	1899
King, Edward, Asheville, Harvard Med. School, 1917	1921	1922
Knoefel, A. E., Black Mountain, Univ. of Louisville, 1893	1914	1916
Long, Roy C., Asheville, Univ. of Tenn., 1912	1921	1921
Lord, Marjery J., Asheville, Univ. of Mich., 1916	1918	1918
Lynch, J. M., Asheville, Univ. of Md., 1904	1912	1913
McCall, A. C., Asheville, Univ. of Md., 1910	1910	1912
McCracken, C. M., Fairview, N. C. Med. Coll., 1896	1896	1904
MacPherson, G. S., Asheville, Harvard Med. School, 1894	1919	1920
MacRae, J. D., Asheville, Univ. of Nashville, Med. Dept., 1897		1920
Mallette, E. P., Hendersonville, L. I. Coll. Hosp., 1889	1914	1914
Minor, Chas. L., Asheville, Univ. of Va., 1888	1895	1898
Morgan, B. E., Asheville, Univ. of Tenn., 1917	1921	1921
Orr, Chas. C., Asheville, Univ. of Md., 1904	1904	1905
Orr, P. B., Asheville, Jeff. Med. Coll., 1901	1901	1904
Pendleton, W., Asheville, Univ. of Va., 1908	1919	1920
Purefoy, G. W., Asheville, (Hon.), Jeff. Med. Coll., 1876	1884	1884
Reeves, A. F., Asheville, Geo. Washington Univ., 1906	1909	1910

Name and Address	*Licensed*	*Joined State Society*
Reeves, R. J., Leicester, Univ. of Tenn., 1913	1913	1922
Reynolds, C. V., Asheville, Univ. of N. Y., 1895	1895	1896
Richardson, F. H., Black Mountain, Cornell Univ., 1906	1907	1920
Ringer, Paul H., Asheville, P. and S., N. Y., 1904	1906	1907
Schoenheit, E. W., Asheville, Jeff. Med. Coll., 1920	1920	1921
Scott, R. C., Asheville, Jeff. Med. Coll., 1902	1916	1919
Scruggs, W. H., Asheville, Univ. of Md., 1913	1915	1917
Sevier, D. E., Asheville, Jeff. Med. Coll., 1895	1895	1899
Sevier, J. T., Asheville, Jeff. Med. Coll., 1895	1895	1899
Smith, B. R., Asheville, Jeff. Med. Coll., 1911	1913	1914
Sprinkle, C. N., Weaverville, Jeff. Med. Coll., 1910	1910	1922
Stevens, M. L., Asheville, Balt. Med. Coll., 1891	1892	1893
Tennent, G. S., Asheville, N. C. Med. Coll., 1894	1894	1898
Terry, P. R., Asheville, Geo. Washington Univ., 1906	1912	1913
Thompson, A. C., Asheville, Georgetown Univ., 1911	1921	1922
Von Ruck, Karl, Asheville, (Hon.) Univ. of Tubingen, 1878	1889	1891
Ward, John LaB., Asheville, Med. Coll. of S. C., 1905	1921	1922
Weaver, H. B., Asheville, (Hon.) Wash. Univ., Balt., 1872	1881	1882
Weaver, W. J., Asheville, Jeff. Med. Coll., 1898	1898	1915
White, R. A., Asheville, Univ. Cincinnati, 1918	1920	1921
Whittington, W. P., Asheville, (Hon.) P. and S., Baltimore, 1882	1882	1882
Willis, A. P., Candler, Univ. of N. C., 1904	1904	1919
Wilson, R. G., Asheville, Univ. of Pa., 1919	1919	1921

BURKE COUNTY SOCIETY

President, Jas. W. Vernon, Morganton, Jeff. Med. Coll., 1909	1909	1913
Secretary, G. M. Billings, Morganton, Tulane Univ. of La., School of Medicine, 1909	1919	1920
Anderson, J. R., Morganton, Tulane Univ., 1882	1885	1903
Bristow, C. O., Morganton, Jeff. Med. Coll., 1918	1920	1921
Gayle, E. M., Richmond, Va., Univ. of Va., 1902	1902	1902
Kibler, W. H., Morganton, Univ. of Pa., 1914	1914	1918
Long, B. L., Glen Alpine, N. C. Med. Coll., 1913	1913	1914
McCampbell, John, Morganton, Nalt. Med. Coll., 1894	1895	1899
Phifer, Edward M., Morganton, N. C. Med. Coll., 1901	1902	1904
Riddle, J. B., Morganton, Vanderbilt Univ., 1898	1904	1904
Watkins, Fisco B., Morganton, Jeff. Med. Coll., 1907	1907	1910

CABARRUS COUNTY SOCIETY

President, Wm. H. Wadsworth, Concord, Jeff. Med. Coll., 1911	1913	1913
Secretary, John F. Reed, Concord, Univ. of New York, 1893	1909	1912
Bangle, J. A., Concord, Med. Coll. of Richmond, Va., 1916	1916	1919
Buchanan, S. E., Concord, Univ. of Md., 1912	1912	1914
Bunn, J. J., Mt. Pleasant, N. C. Med. Coll., 1912	1913	1915
Burleyson, L. N., Concord, Univ. of Md., 1891	1891	1906
Caldwell, D. G., Concord, (Hon.), Univ. of Md., 1885	1885	1885

Name and Address	*Licensed*	*Joined State Society*
Cauble, H. H., Kannapolis, N. C. Med. Coll., 1907	1907	1911
Cease, H. Wm., Concord, Univ. of Tenn., 1894	1919	1922
Gouger, Geo. J., Concord, Univ of Md., 1891	1891	1899
Hartsell, J. A., Concord, Jeff. Med. Coll., 1912	1914	1916
King, Richard M., Concord, Jeff. Med. Coll., 1903	1903	1907
Lubchenko, N. E., Harrisburg, N. C. Med. Coll., 1915	1915	1916
MacFadyen, Paul R., Concord, Med. Coll. of Va., 1901	1901	1904
Patterson, John A., Concord, Univ. Coll. of Va., 1911	1911	1912
Pemberton, Wm. D., Concord, (Hon), Univ. of Md., 1887	1887	1887
Pharr, T. F., Concord, (Hon), Bellevue Med. Coll., 1877	1881	1882
Rankin, R. B., Kannapolis, Univ. of La., 1917	1920	1922
Rankin, S. W., Concord, Jeff. Med. Coll., 1912	1912	1914
Smoot, J. E., Concord, Balt. Med. Coll., 1893	1894	1902
Sossomon, J. C., Midland, N. C. Med. Coll., 1915	1917	1918
Yow, I. A., Georgeville, N. C. Med. Coll., 1906	1907	1910

CALDWELL COUNTY SOCIETY

President, A. B. Goodman, Lenoir, N. C. Med. Coll., 1897	1897	1910
Secretary, W. M. White, Lenoir, Atlanta Coll. P. and S., 1899	1899	1905
Carter, G. H., Kings Creek, Univ. of N. Y., 1877	1899	1904
Coffey, L. H., Lenoir, Med. Coll. of Va., 1906	1906	1913
Corpening, O. J., Granite Falls, U. Coll. of Med., Va., 1906	1906	1907
Hickman, M. T., Hudson, Univ. of Va., 1909	1909	1910
Houck, Albert F., Lenoir, P. and S., Balt., 1884	1891	1893
Kent, Alfred A., Lenoir, Jeff. Med. Coll., 1885	1885	1894
McNairy, Caroline, Lenoir, Woman's Med. Coll. of Pa., 1917	1917	1919
Pitts, W. I., Lenoir, Univ. of South, Sewanne, 1903	1911	1913
Storie, J. G., Proctor, Tenn. Med. Coll., 1898	1898	1908
Wilson, C. L., Lenoir, U. S. Grant Univ., 1903	1903	1905

CARTERET COUNTY SOCIETY

President, C. S. Maxwell, Beaufort, Univ. of the South, 1900	1899	1904
Secretary, D. H. Reed, Morehead City, George Wash. Univ., 1901	1904	1917
Bonner, K. P. B., Raleigh, Med. Coll. of Va., 1905	1905	1905
Davis, George, Beaufort, Univ. of Ky., 1894	1896	1904
Loftin, P. B., Beaufort, Univ. of Md., 1888	1888	1918
Royal, Ben F., Morehead City, Jeff. Med. Coll., 1909	1909	1909
Swindell, C. L., Beaufort, Univ. of Md., 1909	1909	1920
Whitehurst, E. B., Marshallberg, Med. Coll. of Va., 1917	1917	1920

CASWELL COUNTY SOCIETY

President,	———	———
Secretary,	———	———
Malloy, S. A., Yanceyville, Ky. School of Med., 1897	1898	1903

CATAWBA COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President, F. Y. Long, Catawba, Balt. Med. Coll.; N. C. Med. Coll., 1917	1898	1898
Secretary, W. G. Bandy, Maiden, Vanderbilt University, 1908	1912	1916
Abernathy, H. L., Hickory, Univ. of Ky., 1886	1887	1887
Blackburn, T. C., Hickory, Balt. Med. Coll., 1896	1896	1909
Campbell, J. R., Newton, Univ. of Md., 1876	1885	1898
Flowers, G. E., Hickory	.....	1915
Foard, F. T., Hickory, Univ. of Ky., 1886	1886	1904
Hollar, O. L., Hickory, Balt. Med. Coll., 1892	1898	1920
Hunsucker, C. L., Hickory, N. C. Med. Coll., 1913	1913	1915
Klutz, A. F., Maiden, Jeff. Med. Coll., 1917	1917	1920
Klutz, P. J., Maiden	1885	1916
Long, Glenn, Newton, N. C. Med. Coll., 1912	1912	1915
McCorkle, M. Lock, Newton, Univ. of Pa., 1917	1917	1922
Menzies, H. C., Hickory, N. C. Med. Coll., 1894	1894	1899
Price, K. A., Hickory, Univ. of Va., 1907	1907	1909
Rowe, H. E., Hickory, N. C. Med. Coll., 1905	1905	1917
Rowe, R. H., Hickory, Univ. of Louisville, 1912	1912	1913
Shipp, Geo. W., Newton, Louisville Med. Coll., 1897	1911	1915
Shuford, J. H., Hickory, Univ. of Mich., 1901	1902	1902
Speas, W. P., Hickory, Univ. Coll. of Med., Richmond, 1911	1911	1919
Stevenson, T. T., Hickory, Univ. of Ky., 1893	1893	1907
Williams, J. H., Claremont	.....	1922

CHATHAM COUNTY SOCIETY

President,	.....	.....
Secretary, W. Clyde Thomas, Siler City, Med. Coll. of Va., 1917	1917	1920
Chapin, Wm. B., Pittsboro, Univ. of N. C., 1909	1909	1910
Denson, H. A., Bennett, Coll. of P. and S., Ind., 1887	1913	1913
Edwards, J. D., Siler City, Louisville Med. Coll., 1887	.....	1894
Palmer, R. W., Gulf, Louisville Med. Coll., 1890	1891	1891
Upchurch, C. G., Moncure, Univ. of Md., 1906	1907	.....

CHEROKEE COUNTY SOCIETY

President, J. N. Hill, Murphy, Univ. of Louisville, 1909	1909	1909
Secretary, N. B. Adams, Murphy, Tenn. Med. Coll., 1896	1909	1909
Herbert, Fred L., Andrews, Lincoln Mem. Univ., 1904	1912	1912
Highway, S. C. Murphy, Ohio Med. Coll., 1885	1885	1898
Meroney, B. B., Murphy, Gate City Med. Coll., Tex., 1906	1908	1909
Morrow, Wm. C., Andrews, Atlanta School of Med., 1907	1909	1909
Orr, C. V., Andrews, Univ. of La.	1909	1909
Tidwell, J. E., Andrews, Chattanooga Med. Coll., 1903	1913	1915
Webb, B. G., Andrews, Louisville Med. Coll., 1885	1885	1885
Young, G. M., Postell, Lincoln Mem. Univ., 1916	1917	1918

CHOWAN-PERQUIMANS COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President,		
Secretary,		
Cason, H. M. S., Edenton, Univ. of Md., 1899	1899	1899
Cox, Thomas A., Hertford, Univ. of Md., 1892	1907	1918
Dillard, Richard, Jr., Edenton, (Hon.), Jeff. Med. Coll., 1879	1880	1880
McMillan, J. D., Edenton (Hon.)		
Mitchener, J. S., Raleigh, Johns Hopkins Univ., 1915	1917	1918
Smith, Robt. W., Hertford, Univ. of Md., 1892	1892	1918
Whichard, M. P., Edenton, Univ. of Md., 1910	1910	1918

CLEVELAND COUNTY SOCIETY

President, Ben Gold, Shelby, Coll. of P. and S., Balt., 1921	1921	1922
Secretary, T. G. Hamrick, Shelby, P. and S., Balt., 1895	1904	1904
Aydlette, J. P., Earl, Ky. Univ., 1901	1903	1903
Ellis, R. C., Shelby, (Hon.), Balt. Med. School, 1886		1891
Gibbs, E. W., Shelby, Univ. of N. C., 1907	1907	1918
Gold, G. M., Shelby, Rt. 5, Charlotte Med. Coll., 1911	1911	1914
Gold, T. B., Lawndale, N. C. Med. Coll., 1911	1911	1915
Hamrick, J. Y., Jr., Boiling Springs, P. and S., N. Y., 1916	1916	1917
Harper, J. M., Mooresboro, Univ. of N. C., 1910	1910	1911
Houser, E. A., Shelby, Balt. Univ., 1902	1902	1904
Hunt, J. F., Casar, Univ. of Tenn., 1900	1900	1912
Lackey, F. H., Fallston, Univ. of Md., 1915	1915	1920
Lattimore, E. B., Shelby, Bellevue Med. Coll., 1897	1897	1904
Lee, L. V., Lattimore, Atlanta School of Med., 1894	1897	1904
Mitchell, W. F., Shelby, Univ. of Md., 1890	1900	1904
Oates, George, Grover, Univ. of Louisville, 1892	1894	1904
Palmer, B. H., Shelby, Louisville Med. Coll., 1896	1898	1904
Royster, S. S., Shelby, Tenn. Med. Coll., 1890	1896	1904
Wood, J. W., Shelby, Rt. 3, Louisville Med. Coll., 1892	1893	1900

COLUMBUS COUNTY SOCIETY

President,		
Secretary,		
Baggett, Leaman, Tabor, N. C. Med. Coll., 1907	1907	1909
Cox, G. S., Tabor, N. C. Med. Coll., 1911	1911	1914
Duval, T. F., Bolton		1922
Floyd, L. D., Cerro Gorda, N. C. Med. Coll., 1911	1911	1912
Johnson, Floyd, Whiteville, Memphis H. M. C., 1903	1903	1904
Moore, T. V., Acme, Balt. Med. Coll., 1901	1901	1911
Sadler, R. C., Whiteville, N. C. Med. Coll.,	1912	1915
Smith, W. F., Chadbourne, N. C. Med. Coll., 1904	1904	1905
Whitaker, R. B., Whiteville, Univ. of Va., 1912	1912	1913

CRAVEN COUNTY SOCIETY

Name and Address	Licensed	Joined State Society
President,		
Secretary,		
Caton, Geo. A., New Bern, Med. Coll. of Va., 1898	1898	1904
Daniels, R. L., New Bern, Med. Coll. of Va., 1912	1912	1919
Duffy, R. N., New Bern, Johns Hopkins Univ., 1906	1907	1908
Duffy, Leinster, New Bern, P. and S., Balt., 1888	1888	1888
Hughes, F. W., New Bern, Univ. of Pa., 1880	1885	1885
Jones, R. D., New Bern, Univ. of Md., 1896	1897	1897
Milbee, R. O., Cove City, Univ. of Ky., 1911	1914	1922
Pollock, Raymond, New Bern, Jeff. Med. Coll., 1899	1900	1900

CUMBERLAND COUNTY SOCIETY

President, H. L. Cook, Jr., Fayetteville, Jeff. Med. Coll., 1918	1918	1920
Secretary, J. R. Vann, Jr., Fayetteville, Jeff. Med. Coll., 1917	1917	1920
Allgood, R. A., Fayetteville, Univ. of Md., 1912	1916	1917
Averitt, K. G., Cedar Creek, Balt. Med. Coll., 1893	1893	1902
Bullock, Thos. C., Autryville, P. and S., Balt., 1885	1885	1905
Gainey, John W., Fayetteville, Univ. of Pa., 1917	1917	1921
Highsmith, J. D., Fayetteville, Jeff. Med. Coll., 1918	1918	1920
Highsmith, J. F., Fayetteville, Jeff. Med. Coll., 1889	1889	1893
Highsmith, Seavy, Fayetteville, Univ. of Va., 1901	1901	1902
Jordan, Wm. S., Fayetteville, Univ. of N. C., 1906	1906	1907
Larkin, E. W., Fayetteville, Univ. of N. C., 1917	1920	1922
Lilly, Jas. M., Fayetteville, Univ. of Va., 1903	1903	1904
McFayden, O. L., Fayetteville, N. C. Med. Coll., 1912	1912	1912
McGougan, J. V., Fayetteville, P. and S., Balt., 1893	1893	1909
McKethan, D. G., Fayetteville, Univ. of Va., 1899	1899	1899
McKethan, Jno. A., Fayetteville, N. C. Med. Coll., 1901	1901	1903
McNiell, J. W., Fayetteville, (Hon.), Bellevue, 1876	1876	1876
Olive, P. W., Wade, P. and S., Balt., 1907	1907	1909
Pittman, R. L., Fayetteville, Univ. of Md., 1906	1910	1912
Rainey, W. T., Fayetteville, Univ. of Va., 1913	1913	1916
Smoot, M. L., Fayetteville, Univ. of Va., 1903	1903	1904
Verdery, W. C., Fayetteville, Univ. of Ga., 1914	1914	1921
West, T. M., Fayetteville, Univ. of Md., 1908	1910	1910

CURRITUCK COUNTY SOCIETY

President, J. M. Newbern, Jarvisburg, Georgetown Univ., 1898	1899	1900
Secretary, S. M. Mann, Moyock, P. and S. Balt., 1895	1895	1904
Cowell, W. H., Shawboro, Ky. School of Med., 1893	1909	1911
Gatling, O. C., Knots Island, Univ. of Md., 1910	1910	1918
Griggs, W. T., Poplar Branch, Univ. of Va., 1896	1896	1901

DAVIDSON COUNTY SOCIETY

President, J. R. Terry, Lexington, Univ. of Louisville, 1911	1912	1912
Secretary, R. V. Yokeley, Thomasville, N. C. Med. Coll., 1911	1911	1912

Name and Address	Licensed	Joined State Society
Anderson, Abel, Denton		1904
Buchanan, E. J., Lexington, Univ. of Md., 1892	1892	1900
Clodfelter, C. M., Lexington, P. and S., Balt., 1905	1905	1907
Hill, David J., Lexington, P. and S., Balt., 1893	1893	1894
Hill, W. Lee, Lexington, Rt. 4, P. and S., Balt., 1893	1893	1904
Hobgood, J. E., Thomasville, Jeff. Med. Coll., 1907	1907	1917
Julian, Chas. A., Thomasville, Louisville Med. Coll., 1888	1891	1892
Mock, Frank L., Lexington, Rt. 3, N. C. Med. Coll., 1908	1908	1911
Perry, D. R., Lexington		1922
Phillips, C. H., Thomasville, Univ. of Md., 1892	1893	1911
Sharpe, C. R., Lexington, Jeff. Med. Coll., 1914	1914	1917
Smith, J. A., Lexington, N. C. Med. Coll., 1915	1915	1917
Thompson, C. D., Lexington, Univ. of Tenn., 1901	1901	1904
Vestal, W. J., Lexington, P. and S., Balt., 1883	1885	1893
York, A. A., Southmont, Chattanooga Med. Coll., 1907	1907	1909
Zimmerman, Robert U., Lexington, Rt. 4, N. C. Med. Coll., 1901	1901	1904

DAVIE COUNTY SOCIETY

President, W. C. Martin, Mocksville, P. and S., Balt., 1888	1888	1904
Secretary, Andrew B. Byerly, Cooleemee, Univ. of Va., 1896	1896	1904
Nicholson, C. R., Harmony, N. C. Med. Coll., 1912	1912	1916
Rodwell, John W., Mocksville, P. and S., Balt., 1895	1895	1896

DUPLIN COUNTY SOCIETY

President, John W. Carroll, Wallace, Univ. of Md., 1903	1903	1903
Secretary, R. C. Williams, Wallace, Univ. of Md., 1912	1915	1916
Carr, R. L., Rose Hill, Balt. Med. Coll., 1907	1908	1909
Crocker, Wm. D., Warsaw, Louisville Med. Coll., 1887	1896	1904
Farrior, J. W., Warsaw, Univ. of Pa., 1912	1913	1917
Landen, J. F., Chinquapin, Univ. of Va., 1905	1905	1907
Maxwell, J. F., Pink Hill		1917
Morton, J. X., Faison, Univ. of N. C., 1915	1915	1922
Quinn, Robert F., Magnolia, N. C. Med. Coll., 1912	1913	1916
Robinson, J. D., Wallace, Univ. of Md., 1915	1915	1917
Williams, James M., Warsaw, Univ. of Md., 1902	1902	1902

DURHAM COUNTY SOCIETY

President, W. W. Olive, Durham, Univ. of Md., 1906	1907	1909
Secretary, H. M. Sweaney, Durham, Univ. of Pa., 1919	1919	1920
Abernethy, E. A., Durham, Med. Coll. of Va., 1901	1901	1914
Adams, C. A., Durham, P. and S., Balt., 1892	1892	1901
Adkins, M. T., Durham, Johns Hopkins Univ., 1907	1915	1916
Baynes, R. H., Durham, Univ. of Md., 1914	1914	1920
Bitting, Numa D., Durham, Jeff. Med. Coll., 1907	1907	1909
Boddie, Needham P., Durham, (Hon.), P. and S., Balt., 1883	1883	1883

Name and Address	*Licensed*	*Joined State Society*
Booker, Lyle S., Durham, Univ. of Va., 1908	1910	1911
Boone, W. H., Durham, N. C. Med. Coll., 1902	1902	1910
Bowling, Edwin H., Durham, P. and S., Balt., 1890	1890	1908
Brooks, B. U., Durham, Univ. of Md., 1905	1905	1907
Bullitt, J. B., Chapel Hill, Univ. of Va., 1897	1914	1915
Cheatham, Archibald, Durham, (Hon.), Univ. of Md., 1888	1888	1888
Coppridge, W. M., Durham, Jeff. Med. Coll., 1918	1919	1920
Darden, O. B., Richmond Va., Med. Coll. of Va., 1918	1918	1920
Fassett, Burton W., Durham, Balt. Med. Coll., 1898	1899	1909
Felts, Robert L., Durham, Univ. of Md., 1898	1901	1909
Hayes, R. B., Hillsboro, Univ. of Md., 1906	1910	1917
Hicks, Calvin S., Durham, Univ. of Md., 1904	1904	1904
Hicks, Wm. N., Durham, (Hon.), Med. Coll. of Va., 1864	1879	1879
Holloway, O. W., Durham, Med. Coll. of Va., 1901	1901	1917
Holloway, Robt. Lee, W. Durham, Med. Coll. of Va., 1893	1893	1901
Johnson, Norman M., Durham, (Hon.) P. & S. Balt., 1877	1879	1879
Kerns, T. C., Durham, Univ. of Pa., 1911	1911	1912
Lawson, R. B., Chapel Hill, Univ. of Md., 1902	1915	1920
Lloyd, B. B., Chapel Hill, Univ. of N. C., 1909	1909	1914
Lyon, E. H., Bahama, Univ. of Md., 1904	1904	1912
MacNider, Wm. DeB., Chapel Hill, Univ. of N. C., 1902	1902	1903
McPherson, S. D., Durham, Univ. of Md., 1903	1903	1912
Manning, I. H., Chapel Hill, L. I. Coll. Hosp., N. Y., 1897	1899	1901
Manning, John M., Durham, (Hon.) Bellevue Med. Coll., 1882	1882	1884
Montague, S. J., Durham, Univ. of N. Y. 1872	1880	1922
Nichols, Rhodes E., Gorman, Va. Med. Coll., 1890	1890	1904
Ray, Hickman, Durham, Univ. of Md., 1915	1915	1920
Roberson, Foy, Jeff. Med. Coll., 1909	1909	1912
Ross, Geo. H. E., Durham, Univ. of Tenn., 1899	1904	1904
Schuler, J., East Durham, Univ. of Va., 1914	1920	1922
Speed, J. A., Durham, Jeff. Med. Coll., 1914	1914	1916
Sterrett, J. R., West Durham, Univ. of Va., 1908	1913	1916
Stoner, I. J., West Durham, Memphis Med. Coll., 1893	1921	1922
Sweaney, John, West Durham, P. & S. Balt., 1886	1888	1916
Watkins, G. T., Durham, Jeff. Med. Coll., 1915	1915	1917

EDGECOMBE COUNTY SOCIETY

President,	.....	.....
Secretary,	.....	.....
Bailey, Robert S., Conetoe, Univ. of Md., 1896	.....	1922
Baker, J. M., Tarboro, (Hon.) Univ. of Md., 1879	1879	1879
Barber, Y. M., Macclesfield, Univ. of Md., 1914	1917	1918
Bass, Spencer P., Tarboro, Univ. of Va., 1906	1907	1909
Cutchin, J. H., Whitakers, Univ. of Va., 1911	1911	1922
Green, Wm. W., Tarboro, Univ. of N. C., 1908	1908	1910
Harrell, Samuel N., Tarboro, Univ. of Md., 1897	1897	1904
Jones, E. E., Elm City, P. and S., Balt., 1883	.....	1920

Name and Address	*Licensed*	*Joined State Society*
Lane, M. E., Pinetops	1921	1922
Norfleet, L. E., Tarboro, Columbia Univ., 1888	1890	1920
Raby, J. G., Tarboro, Univ. of Va., 1911	1911	1912
Royster, Thomas H., Tarboro, Univ. of Md., 1908	1908	1914
Speight, R. H., Sr., Whitakers, (Hon.), Univ. of Md., 1870	1875	1875
Thigpen, Wm. J., Tarboro, Jeff. Med. Coll., 1900	1900	1901
Wooten, Amos M., Pinetops, Univ. of N. C., 1910	1910	1911

FORSYTH COUNTY SOCIETY

President, W. L. Grimes, Winston-Salem ,Johns Hopkins Univ., 1910	1910	1915
Secretary, S. W. Hurdle, Winston-Salem, Jefferson Med. Coll., 1914	1915	1916
Bolton, J. F., Winston-Salem, Univ. of Pa., 1914	1914	1916
Benbow, J. T., Winston-Salem, N. C. Med. Coll., 1910	1910	1920
Bowers, M. A., Tulane Univ., 1911	1911	1914
Butler, Leroy J., Winston-Salem, Med. Coll. of Va., 1920	1920	1921
Bynum, John, Winston-Salem, (Hon.), University of N. Y., 1892	1892	1893
Bynum, Wade H., Germantown, Univ. Coll. of Med., Va., 1900	1900	1900
Carlton, Romulus L., Winston-Salem, Univ. of Md., 1906	1906	1908
Cooke, G. C., Winston-Salem, Univ. of Md., 1918	1919	1920
Craig, S. Douglas, Winston-Salem, Tulane Univ., 1908	1908	1912
Dalton, David N., Winston-Salem, (Hon.), Univ. of N. Y., 1881	1885	1885
Dalton, Wm. N., Winston-Salem, N. C. Med. Coll., 1904	1904	1905
Daugherty, J. E., Brooklyn, N. Y., Barnes Med. Coll., 1910	1910	1920
Davis, J. M., Winston-Salem, Columbia Univ., 1913	1913	1920
Davis, Thomas W., Winston-Salem, S. C. Med. Coll., 1898	1900	1900
Fearrington, Jos. P., Winston-Salem, Univ. of Md., 1887	1887	1904
Flippin, James M., Winston-Salem, P. and S., Balt., 1884	1884	1910
Flynt, S. S., Rural Hall, P. and S., Balt., 1889	1890	1907
Gray, Eugene Price, Winston-Salem, Johns Hopkins Univ., 1906	1907	1909
Hammock, J. C., Walkertown, P. and S., Balt., 1889	1890	1908
Hanes, F. M., Winston-Salem, Johns Hopkins Univ., 1908	1908	1917
Hege, J. Roy, Clemmons, Univ. of Md., 1916	1916	1917
Izlar, H. L., Winston-Salem, N. C. Med. Coll., 1915	1916	1916
Jennings, R. G., Winston-Salem, N. C. Med. Coll., 1913	1913	1920
Johnson, Wingate M., Winston-Salem, Jeff. Med. Coll., 1908	1908	1911
Johnston, W. W., Winston-Salem, N. C. Med. Coll., 1913	1913	1920
Jones, Beverley N., Winston-Salem, Med. Coll. of Va., 1915	1915	1921
Kapp, Henry H., Winston-Salem, Jeff. Med. Coll., 1901	1901	1904
Keiger, O. R., Winston-Salem, Univ. of Va., 1911	1911	1914
Kerr, James E., Winston-Salem, Univ. of Md., 1897	1898	1898
Lawrence, C. S., Winston-Salem, George Washington Univ., 1908	1908	1911
Linville, Aaron Y., Winston-Salem, Univ. of N. Y., 1889	1889	1896
Lockett, Everett A., Winston-Salem, Univ. of Pa., 1902	1903	1904
Long, Vann McKee, Winston-Salem, N. C. Med. Coll., 1906	1906	1911
Lott, H. S., Winston-Salem, Univ. of Ga., 1884	1887	1887

Name and Address	*Licensed*	*Joined State Society*
Mimms, C. W., Winston-Salem, Univ. of Ky.; Vanderbilt, 1914	1916	1917
Moore, R. A., Winston-Salem, N. C. Med. Coll., 1911	1911	1917
Munt, H. F., Winston-Salem, Med. Coll. of Va., 1911	1914	1916
Paddison, Jno. R., Jr., Kernersville, Univ. of Md., 1902	1902	1913
Pepper, John Kerr, Winston-Salem, P. and S., Balt., 1907	1908	1908
Perkins, J. R., Winston-Salem, Med. Coll. of Va., 1904	1904	1917
Pfohl, Samuel F., Winston-Salem, Univ. of Pa., 1894	1898	1898
Redfern, T. C., Winston-Salem, L. I. Med. Coll. Hosp., 1916	1920	1921
Rousseau, J. P., Winston-Salem, Univ. of Md., 1918	1919	1920
Salmons, L. R., Winston-Salem, N. C. Med. Coll., 1912	1912	1916
Schallert, P. O., Winston-Salem, Univ. of Ill., 1904	1904	1912
Schaub, O. P., Winston-Salem, Balt. Med. Coll., 1898	1898	1898
Slate, John S., Winston-Salem, Univ. Coll. of Med., Va., 1900	1900	1920
Spainhour, Ellis H., Winston-Salem, Balt. Med. Coll., 1898	1898	1898
Spencer, Wm. O., Winston-Salem, Jeff. Med. Coll., 1891	1891	1894
Strickland, Edward F., Bethania, Univ. of N. Y., 1887	1887	1893
Summers, Charles L., Baltimore, Md., Univ. and P. and S., Md., 1887	1891	1896
Thompson, Edgar S., Winston-Salem, Univ. of N. Y., 1919	1919	1921
Valk, A. deT., Winston-Salem, Johns Hopkins Univ., 1910	1907	1914
Whittington, James B., Winston-Salem, N. C. Med. Coll., 1911	1911	1913
Wiggins, J. C., Winston-Salem, Univ. of Pa., 1910	1910	1911
Wyatt, Wortham, Winston-Salem, Univ. of Pa., 1913	1913	1916

FRANKLIN COUNTY SOCIETY

President, R. F. Yarborough, Louisburg, Columbia Univ., D. C., 1898	1899	1899
Secretary, Henry H. Johnson, Louisburg, Coll. of P. and S., Balt., 1915	1918	1919
Beam, H. M., Wood, Columbia Univ., N. Y., 1918	1918	1919
Burt, S. P., Louisburg, P. and S., Balt., 1896	1896	1904
Harris, John H., Franklinton, Bellevue Med. Coll., 1886	1886	1904
Henderson, R. B., Franklinton, Univ. of Md., 1887	1887	1904
Johnson, B. C., Bunn, Univ. of N. C., 1909	1910	1910
Malone, James E., Louisburg, Bellevue Med. Coll., 1875	1885	1904
Newell, J. O., Louisburg, P. and S., Balt., 1912	1910	1912
Perry, H. G., Louisburg, P. and S., Balt., 1915	1915	1916
Timberlake, C. V., Youngsville, Univ. of Pa., 1915	1915	1922
Timberlake, Richard E., Youngsville, Jeff. Med. Coll., 1908	1908	1910

GASTON COUNTY SOCIETY

President, Hall M. Eddleman, Gastonia, Ky. School of Med., 1886	1886	1904
Secretary, R. C. Miller, Cramerton, N. C. Med. Coll., 1909	1918	1919
Adams, Charles E., Gastonia, Univ. of Md., 1878	1885	1904
Anders, McT. G., Gastonia, Med. Coll. of Va., 1901	1902	1904
Anderson, James A., Gastonia, Univ. of Ga., 1899	1909	1909

Name and Address	*Licensed*	*Joined State Society*
Anthony, J. E., Kings Mountain, Univ. of Tenn., 1911	1911	1911
Blair, J. L., Gastonia, Emory University, 1915	1920	1921
Boyles, M. F., Dallas, N. C. Med. Coll., 1917	1917	1920
Campbell, J. W., Gastonia, P. and S. Balt., 1893	1919	1920
Clinton, Roland S., Gastonia, Univ. of Md., 1914	1914	1920
DeLaney, Charles O., Gastonia, Jeff. Med. Coll., 1919	1919	1922
Dimmett, J. A., Gastonia, Univ. of Ky., 1904	1906	1922
Garrison, D. A., Gastonia, Louisville Med. Coll., 1896	1896	1900
Glenn, Henry F., Gastonia, P. and S., Atlanta, 1900	1900	1904
Glenn, Lucius N., Gastonia, Univ. of Md., 1897	1897	1904
Hoôd, J. Sidney, Kings Mountain, Jeff. Med. Coll., 1907	1907	1910
Houser, W. H., Cherryville, N. C. Med. Coll., 1900	1900	1904
Hunter, W. B., Gastonia, Univ. of Pa., 1911	1911	1920
Jenkins, John H., Gastonia, Louisville Med. Coll., 1887	1888	1904
Johnson, R. Lee, Gastonia, Jeff. Med. Coll., 1911	1911	1918
Lyday, C. E., Gastonia, Atlanta Sch. of Med., 1910	1910	1920
McAdams, C. R., Belmont, N. C. Med. Coll., 1912	1912	1916
McCombs, C. J., Gastonia, N. C. Med. Coll., 1905	1905	1908
McCoy, Thos. M., Mount Holly, N. C. Med. Coll., 1905	1906	1910
McLean, Charles E., Gastonia, N. C. Med. Coll., 1903	1903	1905
Martin, L. P., Gastonia, Jeff. Med. Coll., 1920	1920	1921
Miller, Oscar L., Gastonia, Emory Univ., 1912	1921	1922
Moore, B. D., Mount Holly, Med. Coll. of Va., 1915	1915	1921
Nolan, J. V., Kannapolis, Jeff. Med. Coll., 1921	1921	1922
Patrick, Geo. R., Jr., Bessemer City, Univ. of Md., 1916	1916	1920
Patrick, L. N., Gastonia, Univ. of Md., 1910	1910	1913
Pressley, J. M., Belmont, N. C. Med. Coll., 1915	1915	1920
Pugh, Charles H., Gastonia, N. C. Med. Coll., 1910	1910	1913
Quickel, Thomas C., Gastonia, Tulane Univ., 1900	1900	1904
Reid, James W., Lowell, Jeff. Med. Coll., 1909	1909	1910
Rhyne, Robert E., Gastonia, N. C. Med. Coll., 1907	1907	1908
Robinson, Frank, Lowell, N. C. Med. Coll., 1878	1878	1904
Sloan, James M., Gastonia, Louisville Med. Coll., 1891	1891	1904
Wilkins, Samuel A., Dallas, University of Ky., 1902	1903	1903

GRANVILLE COUNTY SOCIETY

President, Jos. A. Morris, Oxford, R.F.D., Vanderbilt Univ., 1890	1893	1899
Secretary, W. B. Bullock, Oxford, Bellevue Med. Coll., 1892	1892	1893
Booth, Thomas L., Oxford, Med. Coll. of S. C., 1883	1885	1893
Bullock, J. H., Oxford, Univ. of Va., 1915	1915	1922
Cannaday, Sam H., Oxford, Univ. of Va., 1887	1895	1904
Daniel, N. C., Oxford, N. C. Med. Coll., 1895	1895	1902
Hardee, Parrott R., Stem, P. and S., Balt., 1885	1885	1906
Hays, B. K., Oxford, Univ. of Va., 1894	1894	1897
Meadows, Elijah B., Oxford, R. F. D. 3, Univ. of Va., 1901	1901	1901
Sikes, G. T., Creedmore, (Hon.), Univ. of Md., 1883	1884	1884
Taylor, Wm. L., Stovall, Med. Coll. of Va., 1900	1900	1901

Name and Address	*Licensed*	*Joined State Society*
Thomas, Wm. N., Oxford, Med. Coll. of Va., 1911	1911	1914
Thompson, Joseph, Creedmore, Univ. of Ky., 1904	1908	1912
Watkins, Geo. S., Oxford, Univ. of Va., 1900	1900	1908

GREENE COUNTY SOCIETY

President, John L. Carroll, Hookerton, Louisville Med. Coll., 1905	1905	1909
Secretary, J. H. Harper, Snow Hill, Jeff. Med. Coll., 1905	1906	1907
Dawson, W. E., Hookerton, Jeff. Med. Coll., 1920	1920	1922
Edwards, G. C., Hookerton, (Hon.) Bellevue Med. Coll., 1883	1883	1883
Marlow, W. A., Walstonburg, Jeff. Med. Coll., 1919	1919	1921
Murphy, W. B., Snow Hill, Univ. of Va., 1903	1903	1905
Whittington, W. W., Snow Hill, Louisville Med. Coll., 1895	1895	1902

GUILFORD COUNTY SOCIETY

President, Albert R. Wilson, Greensboro, (Hon.) Jeff. Med. Coll, 1882	1882	1882
Secretary, F. J. Pate, Greensboro, Univ. of Md. and Coll. of P. and S., Balt., 1908	1908	1915
Ashworth, W. C., Greensboro, P. and S., Baltimore., 1892	1892	1904
Austin, J. W., High Point, Jeff. Med. Coll., 1910	1910	1913
Aydlette, H. T., Greensboro, Univ. of Va., 1894	1895	1907
Banner, Chas. W., Greensboro, Univ. of Md., 1899	1899	1901
Battle, John T. J., Greensboro, (Hon.), P. S., Balt., 1884	1884	1890
Beall, Wm. P., Greensboro, (Hon.), Jeff. Med. Coll., 1879	1879	1879
Berry, John, Greensboro, Jeff. Med. Coll., 1908	1908	1920
Best, Benj. W., Greensboro, P. and S., Balt., 1884	1884	1920
Bonner, A. C., Greensboro, Jeff. Med. Coll., 1920	1920	1922
Bowman, H. P., Greensboro, Univ. of Tenn., 1894	1894	1905
Boyles, J. H., Greensboro, P. and S., Balt., 1903	1903	1904
Braddy, Wade H., Greensboro, Univ. of N. C., 1909	1909	1913
Brockman, Harry L., Greensboro, Univ. of Pa., 1917	1917	1921
Burrus, John T., High Point, Univ. of N. C., 1898	1898	1898
Coe, Samuel S., High Point, Univ. of Va., 1911	1912	1913
Cole, Walter F., Greensboro, Johns Hopkins Univ., 1909	1909	1910
Davis, W. C., Summerfield, Univ. of Md., 1896	1899	1904
Dees, Ralph E., Greensboro, Univ. of Md., 1906	1908	1909
Dees, Rigdon O., Greensboro, Univ. of Md., 1906	1906	1908
Dick, Julius V., Gibsonville, Univ. of N. C., 1907	1907	1908
Dodson, H. H., Greensboro, (Hon.) Med. Coll. of Va., 1882	1885	1887
Fields, B. T., Greensboro, Univ. of Va., 1912	1912	1922
Flagge, Phillip W., Jamestown, Wash. Univ., St. Louis, 1902	1919	1919
Fortune, Alex. F., Greensboro, Univ. of Va., 1900	1900	1904
Fox, M. F., Guilford College, (Hon.) P. and S., Balt., 1881	1885	1885
Gilmer, Chas. S., Greensboro, Rt. 6, Univ. of N. Y., 1891	1891	1894
Glascock, J. H., Greensboro, Woman's Med. Coll., Md., 1896	1896	1907
Gove, Anna M., Greensboro, Woman's Med. Coll., N. Y., 1892	1894	1896

Name and Address	Licensed	Joined State Society
Grayson, C. S., High Point, Geo. Washington Univ., 1906	1907	1908
Harrison, Edmund, Greensboro, Univ. of Md., 1896	1900	1900
Henry, T. B., Greensboro, Columbia University, N. Y., 1916	1920	1921
Hiatt, H. B., High Point, Univ. of Md., 1907	1907	1910
Holt, D. W., Revolution Sta., Greensboro, Jeff. Med. Coll., 1918	1918	1920
Holt, Wm. T., McLeansville, Univ. of Tenn., 1890	1890	1896
Hyatt, Fred C., Greensboro, Jeff. Med. Coll., 1907	1907	1912
Jackson, Walter L., High Point, N. C. Med. Coll., 1912	1912	1913
Jarboe, Parron, Greensboro, Georgetown Univ., 1905	1906	1907
Jones, W. M., Jr., Greensboro, Univ. of Md., 1903	1903	1903
Keiger, James A., Greensboro, Univ. of Va., 1916	1916	1919
Knight, Wm. P., Greensboro, Balt. Med. Coll., 1898	1898	1898
Locke, Eva M., Greensboro, Univ. of Mich., 1900	1921	1922
Long, John W., Greensboro, (Hon.) Vanderbilt Univ., 1884	1884	1884
Lyon, B. R., Greensboro, Columbia Univ., N. Y., 1915	1915	1920
McAnally, Wm. J., High Point, Balt. Med. Coll., 1897	1897	1899
McCain, Hugh W., High Point, Jeff. Med. Coll., 1909	1909	1911
McManus, W. L., Greensboro, Atlanta Sch. of Med., 1906	1912	1913
Meadows, W. J., Greensboro, Med. Coll. of Ala., 1894	1889	1904
Micheaux, Edward R., Greensboro, Univ. of N. Y., 1889	1889	1904
Miles, May S., Greensboro, Women's Coll., Cinn., O., 1898	1904	1905
Moore, Chas. E., Greensboro, Jeff. Med. Coll., 1907	1909	1910
Moore, W. B., Brown Summit, P. and S., Balt., 1893	1893	1904
Moseley, Charles W., Greensboro, Balt. Med. Coll., 1893	1893	1896
Norman, Geo. W., Pomona, Balt. Med. Coll., 1896	1896	1904
Ogburn, H. H., Greensboro, Johns Hopkins Univ., 1913	1913	1914
Reaves, W. P., Greensboro, Univ. of the South, 1903	1905	1907
Reitzel, Claude E., High Point, P. and S., Atlanta, 1902	1902	1902
Roberson, Charles, Greensboro, L. I. Coll. Hosp., 1897	1897	1901
Roberson, Geo. B., Greensboro, Med. Coll. of S. C., 1915	1915	1917
Schoonover, R. A., Greensboro, Univ. of Md., 1905	1906	1912
Sharpe, F. A., Greensboro, Univ. of Pa., 1916	1916	1920
Simmonds, L. L., Greensboro, Univ. of Tenn., 1893	1919	1919
Siske, J. E. A., Pleasant Garden, Univ. of N. C., 1902	1902	1922
Smith, Alick T., Greensboro, Med. Coll. of Va., 1908	1910	1913
Smith, Owen, High Point, Jeff. Med. Coll., 1904	1905	1917
Stanton, D. A., High Point, (Hon.), Vanderbilt Univ., 1887	1887	1891
Starr, H. F., Greensboro, Jeff. Med. Coll., 1916	1916	1917
Stockard, J. K., Greensboro, Vanderbilt Univ., 1895	1906	1919
Tankersley, J. W., Greensboro, Jeff. Med. Coll., 1906	1906	1907
Taylor, F. R., High Point, Univ. of Pa., 1913	1913	1915
Thomas, J. G., Greensboro, Med. Coll. of Va., 1915	1915	1920
Turner, J. P., Greensboro, Univ. of Md., 1896	1897	1904
Walker, J. B., Gibsonville, Med. Coll. of Va., 1914	1914	1916
Whitaker, A. C., Julian, Univ. of Tenn., 1903	1903	1908
Williams, B. B., Greensboro, Univ. of Md., 1886	1886	1893
Williams, John A., Greensboro, Univ. of Va., 1898	1898	1898
Williams, John D., Guilford Station, Vanderbilt Univ., 1898	1898	1898

Name and Address	*Licensed*	*Joined State Society*
Wolfe, H. C., Greensboro, Med. Coll. of Va., 1917	1917	1920
Wolff, D. R., Greensboro, Jeff. Med. Coll., 1918	1918	1920
Woodruff, Fred G., High Point, Med. Coll. of Va., 1917	1919	1919

HALIFAX COUNTY SOCIETY

President, Henry B. Furgerson, Halifax, Jefferson Med. Coll., 1882	1882	1904
Secretary, P. C. Carter, Weldon, Univ. of Md., 1916	1916	1920
Beckwith, R. P., Rosemary, Univ. of Pa., 1911	1913	1916
Flemming, W. L., Enfield, Univ. of N. C., 1910	1910	1916
Jarman, F. G., Roanoke Rapids, Univ. of Va., 1911	1914	1916
Justice, L. H., Littleton, Med. Coll. of Va., 1916	1920	1920
Lassiter, H. G., Weldon, Jeff. Med. Coll., 1918	1918	1920
Leggett, Kenelm, Hobgood, (Hon.), Ky. Sch. of Med., 1884	1885	1885
Leggett, V. W., Hobgood, Univ. of Louisville, 1913	1916	1920
Long, T. W. M., Roanoke Rapids, Univ. of Va., 1908	1909	1900
MacRae, Neal, Littleton, Univ. of Va., 1900	1900	1920
Martin, J. W., Roanoke Rapids, Med. Coll. of Va., 1916	1917	1920
Morehead, R. P., Weldon, P. and S., Balt., 1895	1895	1900
Nicholson, B. M., Enfield, Univ. of Va., 1900	1910	1913
Palmer, Horace, Hollister, Atlanta Sch. of Med., 1912	1912	1920
Patchin, D. F., Rosemary, Univ. of N. Y., and Bellevue, 1913	1916	1917
Picot, L. J., Littleton, (Hon.), Jeff. Med. Coll., 1875	1875	1875
Pierce, S. B., Weldon, Bellevue Hosp., 1897	1897	1906
Smith, O. F., Scotland Neck, Univ. of Va., 1899	1899	1904
Suiter, W. G., Weldon, Med. Coll. of Va., 1917	1917	1920
Thigpen, H. G., Scotland Neck, Jeff. Med. Coll., 1917	1917	1920
Whitaker, F. C., Enfield, Md. Med. Coll., 1911	1911	1919
Zollicoffer, Augustus R., Weldon, Univ. of Pa., 1875	1885	1890
Zollicoffer, D. B., Weldon, P. and S., Md., 1881	1881	1904

HARNETT COUNTY SOCIETY

President, Wm. P. Holt, Duke, Jefferson Med. Coll., 1895	1895	1901
Secretary, Wallace E. Coltrane, Dunn, Med. Coll. of Va., Richmond, 1912	1913	1917
Barefoot, M. L., Dunn, R. F. D. 6, Univ. of Md., 1911	1911	1912
Buie, Roderick M., Duke, Jeff. Med. Coll., 1914	1914	1916
Butler, Bruce F., Cooper, Univ. of Va., 1911		1922
Halford, Jos. W., Lillington, Columbia Univ., 1904	1905	1905
Hicks, Isham F., Dunn, N. C. Med. Coll., 1902	1902	1904
Highsmith, Charles, Dunn, Balt. Med. Coll., 1898	1898	1898
McKay, Joseph F., Buies Creek, S. C. Med. Coll., 1884	1885	1904
McLean, John W., Godwin, N. C. Med. Coll., 1902	1902	1906
Melvin, Wayman C., Linden, Univ. of Va., 1900	1900	1905
Riddle, N. C., Lillington, Jeff. Med. Coll., 1919	1919	1921
Roberts, H. C., Coats, Tulane Univ., 1912	1912	1913
Sexton, C. Hector, Dunn, Univ. of Md., 1890	1890	1904

Name and Address	*Licensed*	*Joined State Society*
Turlington, H. C., Dunn, Univ. of Va., 1913	1913	1914
Warren, R. L., Dunn, Tulane Univ., 1911	1911	1912

HAYWOOD COUNTY SOCIETY

President,		
Secretary, J. R. McCracken, Waynesville, N. C. Med. Coll., 1902	1902	1903
Abel, J. F., Waynesville, Univ. of Balt., 1892	1893	1899
Allen, Rufus L., Waynesville, Univ. of Md., 1885	1885	1889
Davis, F. M., Canton, Univ. of Tenn., 1894	1894	1904
Johnson, W. C., Canton, Tulane Univ., 1912	1912	1917
Montgomery, K. E., Waynesville, Univ. of Ky., 1917	1920	1920
Reynolds, T. F., Canton, N. C. Med. Coll., 1904	1904	1920
Russell, Jesse M., Canton, Univ. of Nashville, 1911	1911	1912
Stringfellow, James L., Sunburst, Univ. of Va., 1915	1921	1922
Stringfield, Samuel L., Sunburst, Jeff. Med. Coll., 1905	1905	1907
Stringfield, Thomas, Waynesville, Vanderbilt Univ., 1898	1898	1899
Way, J. Howell, Waynesville, (Hon.), Vanderbilt Univ., 1886	1885	1887

HENDERSON-POLK COUNTY SOCIETY

President, E. P. Mallett, Hendersonville, L. I. Coll. Hosp., Brooklyn, 1889	1914	1914
Secretary, R. C. Sample, Hendersonville, Univ. of Pa., 1915	1915	1919
Brown, J. S., Hendersonville, Northwestern Univ., 1893	1894	1895
Cliff, B. F., Hendersonville, Geo. Washington Univ., 1908	1914	1915
Dixon, Guy E., Hendersonville, P. and S., St. Louis, 1903	1903	1903
Drafts, Andrew B., Hendersonville, Univ. of Va., 1896	1899	1903
Edgerton, Jas. L., Hendersonville, (Hon.), Univ. of Md., 1877	1885	1890
Grady, Wm. E., Tryon, Univ. of Md. and P. and S., Balt., 1894	1895	1899
Greenwood, S. E., Fletcher, Tenn. Med. Coll., 1902	1903	1904
Howe, Wm. B. White, Jr., Hendersonville, Med. Coll. S. C., 1906	1907	1908
Kirk, W. R. Hendersonville, Univ. of Ky., 1890	1901	1903
Salley, E. McQ., Saluda, Univ. of Md., 1905	1905	1908
Summer, Thomas W., Fletcher, Jeff. Med. Coll., 1910	1910	1911

HERTFORD COUNTY SOCIETY

President, R. H. Gary, Murfreesboro, P. and S., Maryland, 1881	1885	1904
Secretary, W. B. Pollard, Winton, University of Pa., 1899	1903	1905
Burbage, Thos. L., Como, Memphis Med. Coll., 1883	1885	1890
Futrell, L. M., Murfreesboro, Va. Med. Coll., 1914	1914	1918
Greene, Arthur W., Ahoskie, Richmond Coll. of Med., 1904	1904	1905
Harrell, Geo. N., Murfreesboro, Coll. of Med., Richmond, 1907	1907	1909
Mitchell, Jesse H., Ahoskie, Univ. of Balt., 1879	1885	1904
Mitchell, Paul H., Ahoskie, Coll. of Med., Richmond, 1907	1907	1908
Powell, Jesse A., Harrellsville, P. and S., Balt., 1907	1908	1909
Walker, L. K., Ahoskie, Univ. of Md., 1911	1911	1917

HOKE COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President, R. B. Wilkins, Raeford, N. C. Med. Coll., 1913	1913	1915
Secretary, L. B. McBrayer, Sanatorium, Univ. of Md. and Coll. of P. and S., Balt., 1891	1891	1899
Brown, G. W., Raeford, Ky. Sch. of Med., 1898	1900	1900
Graham, Geo. A., Raeford, Univ. of N. Y., 1876	1885	1904
McBrayer, R., Sanatorium, Univ. of Pa., 1916	1916	1917
McCain, P. P., Sanatorium, Univ. of Md. and P. and S., Balt., 1911	1914	1917

HYDE COUNTY SOCIETY

President,		
Secretary,		
Angle, J. B., Ocracoke		1922
Harris, Arthur G., Fairfield, Univ. of the South, 1905	1907	1908

IREDELL-ALEXANDER COUNTY SOCIETY

President, Roy C. Tatum, Statesville, Univ. of Pa., 1919	1919	1920
Secretary, J. E. McLaughlin, Statesville, Univ. of Md., 1886	1886	1900
Adams, M. R., Statesville, (Hon.), Univ. of Md., 1878	1884	1884
Anderson, Thos. E., Statesville, (Hon.), Jeff. Med. Coll., 1878	1878	1879
Bell, A. E., Mooresville, Univ. of Md. and P. and S., 1897	1897	1904
Bennett, W. H., Statesville, Loyola Univ., 1918	1920	1922
Brandon, Wm. R., Statesville, Univ. of Md., 1914	1914	1916
Carpenter, F. A., Statesville, N. C. Med. Coll., 1906	1906	1906
Crouch, T. D., Stoney Point, N. C. Med. Coll., 1909	1909	1915
Davis, Jas. W., Statesville, Univ. of Pa., 1913	1913	1915
Easley, P. S., Statesville, N. C. Med. Coll., 1907; Jeff., 1908	1907	1913
Gilmore, W. D., Johnson City, Tenn., Univ. of N. C., 1903	1903	1904
Goode, T. V., Jr., Statesville, Univ. of Va., 1912	1912	1916
Jurney, Peter C., Turnersburg, Med. Coll. of Va., 1901	1901	1904
Little, E. E., Statesville, N. C. Med. Coll., 1912	1912	1915
Long, H. F., Statesville, Univ. of Md., 1892	1892	1893
McElwee, Ross S., Statesville, Univ. of Md., 1909	1909	1910
Sherrill, C. L., Statesville, N. C. Med. Coll., 1914	1914	1915
Tally, J. S., Troutman, Univ. of N. C., 1909	1910	1917
Taylor, G. W., Mooresville, N. C. Med. Coll., 1906	1906	1917

JACKSON COUNTY SOCIETY

President, Chas. Z. Candler, Sylva, P. and S., Atlanta, 1901	1901	1904
Secretary, D. D. Hooper, Sylva, Univ. Coll. of Med., Va., 1905	1905	1905
Bryson, E. J., Cullowhee, Bennett, Chicago, Ill., 1913	1914	1915
Nichols, Alvon A., Sylva, Univ. of Nashville, 1898		1904
Nichols, Asbury S., Sylva., Lincoln Mem. Univ., 1905,	1907	1913
Wilkes, Grover C., Sylva, N. C. Med. Coll., 1916	1916	1926

JOHNSTON COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President, Carl V. Tyner, Smithfield, Univ. and Bellevue, N. Y., 1916	1916	1919
Secretary, J. Herbert Fitzgerald, Smithfield, Jeff. Med. Coll., 1920	1920	1922
Bynum, C. M., Princeton, Med. Coll. of Va., 1914	1914	1918
Coleman, G. S., Kenly, Med. Coll. of Va., 1907	1907	1909
Grady, Jas. C., Kenly, P. and S., Balt., 1887	1887	1890
Griffin, J. A., Clayton, (Hon.), P. and S., Balt., 1881		1890
Hinnant, Milford, Micro, Jeff. Med. Coll., 1912	1912	1913
Hocutt, Battle A., Clayton, Univ. of N. C., 1906	1906	1908
Hooks, Thel., Smithfield, Med. Coll. of Va., 1901	1901	1903
Lee, S. J. P., Benson, Maryland Med. Coll., 1904	1904	1922
McLemore, Geo. A., Clayton, R. F. D., Univ. of N. C., 1906	1906	1908
Martin, J. F., Benson, N. C. Med. Coll., 1905	1905	1918
Mayerburg, I. W., Selma, Univ. of Pa., 1907	1907	1909
Noble, R. J., Selma, Ky. School of Med., 1875	1878	1878
Oliver, A. S., Benson, Jeff. Med. Coll., 1914	1914	1919
Parker, G. E., Benson, P. and S., Balt., 1886	1888	1904
Person, J. B., Selma, Med. Coll. of Va., 1897	1897	1900
Rose, A. H., Smithfield, Jeff. Med. Coll., 1906	1906	1907
Stanley, John H., Four Oaks, Univ. of N. C., 1904	1904	1906
Stevens, R. S., Princeton, Univ. of N. C., 1901	1905	1907
Surles, J. B., Four Oaks, Jeff. Med. Coll., 1902	1909	1919
Utley, H. H., Benson, Balt. Med. Coll., 1901	1901	1901
Vick, Geo. D., Selma, Jeff. Med. Coll., 1906	1906	1907
Wharton, L. D., Smithfield, Tulane Univ., 1893	1893	1894
Woodard, G. B., Kenly, Med. Coll. of Va., 1915	1915	1916
Young, J. J., Clayton, P. and S., Balto., 1897	1896	1904

JONES COUNTY SOCIETY

President,		
Secretary,		
Bell, J. C., Maysville, Univ. of Va., 1910	1915	1922

LEE COUNTY SOCIETY

President, E. M. McIver, Jonesboro, Univ. of N. C., 1908	1908	1911
Secretary, Lynn McIver, Sanford, Univ. of N. C., 1902	1902	1902
Foster, J. F., Sanford, N. C. Med. Coll., 1916	1916	1919
Lutterloh, I. H., Sanford, Univ. of Tenn., 1890		1922
Matthews, M. L., Sanford, Univ. of N. C., 1903	1903	1904
Monroe, J. P., Sanford, P. and S., Balto., 1901	1901	1905
Monroe, W. A., Sanford, (Hon.), Univ. of Md., 1896	1896	1890
Scott, Chas. L., Sanford, Univ. of Md., 1897	1899	1916
Snipes, E. P., Jonesboro, (Hon.), Vanderbilt Univ., 1890	1890	1890
Watson, Leon, Broadway, N. C. Med. Coll., 1890	1900	1904

LENOIR COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President, M. L. Carr, Kinston, Med. Coll. Va., 1916	1916	1920
Secretary, C. P. Mangum, Kinston, Jeff. Med. Coll., 1918	1918	1920
Adams, L. C., La Grange, N. C. Med. Coll., 1903	1903	1921
Hardy, Ira M., Kinston, Med. Coll. of Va., 1901	1902	1902
Hargrove, W. F., Kinston, Univ. of Md., 1900	1900	1900
Hyatt, A. L., Kinston, Univ. of Md., 1910	1910	1921
Kornegay, Geo. E., Kinston, Tulane Univ., 1907	1913	1915
McNairy, C. Banks, Kinston, P. and S., Balt., 1893	1893	1905
Moseley, Z. V., Kinston, Univ. Coll. of Med., 1913	1913	1914
Parrott, Albert DeK., Kinston, Univ. Coll. of Med., 1906	1906	1908
Parrott, Jas. M., Kinston, Tulane Univ., 1895	1895	1896
Parrott, M. C., Kinston, Tulane Univ., 1917	1917	1919
Parrott, Wm. T., Kinston, Tulane Univ., 1895	1895	1901
Peery, Vance P., Kinston, Med. Coll. of Va., 1916	1916	1917
Tull, Henry, Kinston, (Hon.), Univ. of Penn., 1876	1876	1876
West, C. F., Kinston, Univ. of Pa., 1917	1917	1920
Weyher, V. E., Kinston, Vienna, Austria, 1869		1919
Whitaker, F. S., Kinston, Balto. Med. Coll., 1913	1913	1914
Whitaker, R. A., Kinston, (Hon.), P. and S., Balto., 1885	1885	1885
Woodley, C. B., Kinston, Univ. of N. Y., 1886	1886	1890

LINCOLN COUNTY SOCIETY

President, H. N. Abernathy, Denver, Louisville Med. Coll., 1894	1894	1899
Secretary, W. F. Elliott, Lincolnton, Medico-Chir. Coll., 1916	1916	1917
Crowell, L. A., Lincolnton, Balto. Med. Coll., 1892	1892	1898
Edwards, F. D., Bellwood, Atlanta Med. Coll., 1914	1916	1919
Gamble, J. F., Lincolnton, Univ. of Tenn., 1903	1915	1919
Gamble, J. R., Lincolnton, Univ. of Nashville, 1911	1911	1912
Hoover, C. H., Denver, Balto. Med. Coll., 1903	1903	1903
Jacocks, W. P., Columbia, Ceylon, Univ. Pa., 1911	1911	1913
Killian, R. B., Lincolnton, Louisville Med. Coll., 1885	1885	1904
Kiser, W. C., Reepsville, Sou. Med. Coll., 1889	1889	1904
Lee, R. E., Lincolnton, Univ. of Md., 1896	1896	1918
Saine, J. W., Lincolnton, Louisville Med. Coll., 1891	1891	1904
Shellum, O. W., Lowesville, N. C. Med. Coll., 1909	1909	1913

McDOWELL COUNTY SOCIETY

President, John F. Jonas, Marion, P. and S., Balto., 1893	1903	1903
Secretary, John B. Johnson, Old Fort, Univ. of Louisville, 1905	1914	1914
Ashworth, B. L., Marion, P. and S., Balto., 1893	1893	1900
Kirby, Guy S., Marion, Univ. of Va., 1897	1896	1903
McIntosh, D. M., Old Fort, Med. Coll. of Va., 1904	1907	1909

MACON-CLAY COUNTY SOCIETY

President, H. T. Horsley, Franklin, Balto. Med. Coll., 1907	1915	1918
Secretary, W. A. Rogers, Franklin, Univ. of Nashville, 1898	1898	1898

Name and Address	Licensed	Joined State Society
Fouts, J. H. Franklin, Vanderbilt Univ., 1895	1895	1918
Killian, P. B. Hayesville, Coll. P. and S., Atlanta, 1900	1909	1909
Lapham, Mary E., Highlands, Women's Med. Coll. Pa., 1900	1906	1906
Lyle, S. H., Franklin, Univ. of Nashville, 1893	1881	1882
Siler, Fred L., Franklin, Univ. of Nashville, 1897	1898	1903

MADISON COUNTY SOCIETY

President, W. F. Robinson, Mars Hill, Vanderbilt Univ., 1896	1903	1904
Secretary, Frank Roberts, Marshall, Jeff. Med. Coll., 1892	1892	1902
Baird, John W., Mars Hill, Lincoln Memorial Univ., 1901	1908	1909
Burnett, Isaac E., Mars Hill, Lincoln Memorial Univ., 1901	1905	1904
English, I. L., Faust	1887	1904
Packard, G. H., White Rock, P. and S., Balto., 1898	1915	1915
Peck, Edward J., Hot Springs, Univ. of Tenn., 1880		1903
Tilson, J. C., Marshall, Lincoln Memorial Univ., 1885	1885	1904

MARTIN COUNTY SOCIETY

President, Benj. L. Long, Hamilton, (Hon.), Univ. of Md., 1881	1883	1885
Secretary, Wm. E. Warren, Williamston, Nongrad Univ., N. Y.	1893	1894
Hargrove, R. H., Robersonville, (Hon.), Univ. of Md., 1877	1879	1879
Knight, J. B. H., Williamston, (Hon.), P. and S., Balto., 1885	1885	1890
Long, Edgar M., Hamilton, Univ. of Md., 1909	1909	1910
Nelson, Robert J., Robersonville, (Hon.), Louis. Med. Coll., 1890	1890	1893
Rhodes, Jas. S., Williamston, Med. Coll. of Va., 1906	1906	1907
Saunders, J. H., Williamston, Univ. of Va., 1905	1905	1909
Smithwick, Jas. E., Jamesville, Med. Coll. of Va., 1897	1897	1904
Ward, Jesse E., Robersonville, Univ. of Md., 1904	1904	1905
Ward, Vernon A., Robersonville, Jeff. Med. Coll., 1908	1908	1914
York, Hugh B., Williamston, P. and S., Balto., 1906	1906	1907

MECKLENBURG COUNTY SOCIETY

President, L. W. Hovis, Charlotte, North Carolina Med. Coll., 1904	1904	1906
Secretary, J. Lester Ranson, Charlotte, North Carolina Med. Coll., 1911	1911	1912
Alexander, Annie L., Charlotte, (Hon.), Women's Med. Coll. Pa., 1884	1885	1890
Alexander, James R., Charlotte, Univ. of Md., 1894	1894	1889
Alexander, M. Janet, Montgomery, Ind. Women's Med. Coll. Pa., 1917	1917	1918
Allan, William, Charlotte, P. and S., Balt., 1906	1906	1914
Ashe, J. R., Charlotte, Columbia Univ., 1911	1915	1915
Austin, D. R., Charlotte, Jeff. Med. Coll., 1917	1917	1918
Austin, F. DeC., Charlotte, N. C. Med. Coll., 1907	1907	1908
Austin, J. A., Charlotte, Jeff. Med. Coll., 1882	1882	1904
Barrett, H. P., Charlotte, Univ. of Louisville, 1908	1917	1919

Name and Address	Licensed	Joined State Society
Barron, A. A., Charlotte, Vanderbilt Univ., 1909	1909	1910
Blalock, B. K., Charlotte, Univ. of Md., 1913	1913	1917
Bost, T. C., Charlotte, Geo. Washington Univ., 1915	1920	1921
Boyette, E. C., Charlotte, Balt. Med. Coll., 1893	1898	1906
Brenizer, A. G., Charlotte, Johns Hopkins and Heidelberg Univ., 1908	1910	1911
Caldwell, J. H., Charlotte, N. C. Med. Coll., 1914	1914	1914
Collins, George, Charlotte, Jeff. Med. Coll., 1920	1921	1922
Craven, Thomas, Huntersville, Jeff. Med. Coll., 1917	1917	1918
Craven, W. P., Charlotte, Rt. 6, P. and S., Balt., 1883	1887	1887
Craven, W. W., Huntersville, Univ. of Md., 1903	1904	1904
Crowell, Andrew J., Charlotte, Univ. of Md., 1893	1892	1894
Davidson, John E. S., Charlotte, Univ. of Md., 1894	1898	1898
DeArmon, J. McC., Charlotte, (Hon.), Univ. of Md., 1886	1886	1887
Donnelly, J., Charlotte, Univ. of N. C., 1905	1905	1918
Elliott, J. A., Charlotte, Univ. of Mich., 1914	1919	1920
Faison, I. W., Charlotte, (Hon.), Bellevue Med. Coll., 1878	1878	1878
Faison, Yates W., Charlotte, Harvard Univ., 1910	1910	1912
Ferguson, R. T., Charlotte, Univ. Coll. of Med., 1906	1909	1909
Fetner, L. M., Charlotte, N. C. Med. Coll., 1913	1913	1915
Gage, L. G., Charlotte, Univ. of Va., 1915	1921	1922
Gallant, Robert M., Charlotte, N. C. Med. Coll., 1915	1915	1916
Gibbon, James, Charlotte, Jeff. Med. Coll., 1916	1920	1921
Gibbon, Robt. L., Charlotte, (Hon.), Jeff. Med. Coll., 1888	1887	1888
Graham, Wm. A., Charlotte, (Hon.), P. and S., N. Y., 1888	1890	1890
Hand, Edgar H., Pineville, N. C. Med. Coll., 1907	1907	1913
Hasley, Clyde K., Charlotte, Univ. of Mich., 1918	1921	1922
Henderson, S. McD., Charlotte, Univ. of Md., 1894	1894	1904
Herring, W. C., Parsons, Kas., Univ. of N. Y., 1890		1918
Hipp, Edw. R., Charlotte, Univ. of Va., 1918	1920	1921
Houser, O. J., Charlotte, N. C. Med. Coll., 1915	1914	1916
Hunter, L. W., Charlotte, Rt. 1, (Hon.), Bellevue, N. Y., 1875	1880	1880
Hunter, M. C., Huntersville, P. and S., Balt., 1882	1882	1918
Hunter, Myers, Charlotte, Georgetown Univ., 1905	1906	1908
Irwin, Hammer C., Pocatella, Idaho, Univ. of Md., 1912	1914	1916
Irwin, J. R., Charlotte, (Hon.), Univ. of Md., 1879	1882	1882
Johnston, J. G., Charlotte, Vanderbilt Univ., 1899	1913	1916
Justice, Z. K., Davidson, N. C. Med. Coll., 1903	1917	1919
Kennedy, John P., Charlotte, Jeff. Med. Coll., 1915	1915	1920
King, Parks M., Charlotte, Bellevue Med. Coll., 1902	1902	1904
Lafferty, Robt. H., Charlotte, N. C. Med. Coll., 1906	1906	1908
Leinbach, Robert F., Charlotte, Univ. of Pa., 1907	1907	1910
Linney, R. Z., Charlotte, Georgetown Univ., 1901	1914	1918
MacConnell, John W., Davidson, Univ. of Md., 1907	1908	1909
McKay, Hamilton W., Charlotte, Jeff. Med. Coll., 1910	1911	1913
McLaughlin, Calvin S., Charlotte, Univ. of Md., 1896	1896	1903
Martin, W. J., Davidson, Univ. of Va., 1890	1891	1919
Matheson, James P., Charlotte, N. C. Med. Coll., 1902	1902	1907

Name and Address	Licensed	Joined State Society
Mathews, Vann M., Charlotte, Univ. of Pa., 1918	1918	1921
Mills, C. H. C., Charlotte, Univ. of Md., 1897	1900	1919
Misenheimer, Chas. A., Charlotte, (Hon.), N. Y. Univ., 1882	1882	1882
Montgomery, John C., Charlotte, Univ. of N. Y., 1891	1891	1895
Moore, A. W., Charlotte, Univ. of Va., 1901; Univ. of N. Y., 1902	1912	1913
Moore, Baxter S., Charlotte, Univ. of Va., 1901	1905	1905
Moore, Oren, Charlotte, N. C. Med. Coll., 1911	1911	1912
Munroe, J. P., Charlotte, (Hon.), Univ. of Va., 1885	1886	1890
Myers, Alonzo, Charlotte, N. C. Med. Coll., 1911	1911	1920
Myers, J. Q., Charlotte, N. C. Med. Coll., 1904	1904	1910
Nalle, B. C., Charlotte, Univ. of Va., 1903	1905	1905
Nance, C. L., Charlotte, Va. Med. Coll., 1919	1921	1922
Newell, Leone B., Charlotte, Univ. of N. C., 1905	1905	1908
Nisbet, D. Heath, Charlotte, Harvard Med. Dept., 1917	1917	1920
Nisbet, Walter O., Charlotte, Med. Coll. of S. C., 1889	1889	1889
Noble, R. J., Selma, (Hon.), Ky. Med. School, 1875	1878	1878
Northington, J. M., Charlotte, Med. Coll. of Va., 1905	1909	1909
Parsons, W. H., Charlotte, N. C. Med. Coll., 1916	1918	1919
Patterson, Reid, Charlotte, N. C. Med. Coll., 1912	1912	1913
Peeler, Clarence N., Charlotte, N. C. Med. Coll., 1906	1906	1908
Petrie, Robt. Wm., Charlotte, Univ. of Md., 1903	1903	1903
Pharr, Wm. W., Charlotte, (Hon.), P. and S., Balt., 1882	1883	1887
Phillips, C. C., Charlotte, N. C. Med. Coll., 1912	1912	1917
Pressley, Geo. W., Charlotte, Jeff. Med. Coll., 1892	1895	1896
Query, Richard Z., Charlotte, R. F. D., Univ. Coll. of Med., 1907	1907	1908
Ray, F. L., Charlotte, Va. Med. Coll., 1919	1919	1922
Reid, Thomas N., Matthews, N. Y. Univ., 1891	1891	1904
Ross, Otho B., Charlotte, Univ. of Pa., 1901	1901	1912
Ruff, Frank R., Charlotte, Va. Univ. Coll. of Med., 1913	1915	1916
Scruggs, W. Marion, Charlotte, Univ. of Pa., 1914	1914	1920
Shirley, H. C., Charlotte		1922
Shull, J. Rush, Charlotte, Univ. of Pa., 1910	1910	1913
Simmons, John O., Charlotte, Grant Univ., 1894	1906	1908
Skinner, L. C., Chadwick Sta., Charlotte, N. C. Med. Coll., 1902	1902	1902
Sloan, H. L., Charlotte, Univ. of Pa., 1911	1913	1914
Squires, Claude, Charlotte, Univ. of Pa., 1919	1919	1921
Strong, Charles M., Charlotte, Univ. of Md., 1888	1898	1898
Strong, Wm. M., Charlotte, N. C. Med. Coll., 1904	1904	1905
Taylor, H. C., Chadwick Sta., Charlotte, Tenn. Med., 1886	1910	1915
Thompson, S. R., Charlotte, N. C. Med. Coll., 1914	1914	1915
Todd, L. C., Charlotte, Univ. of Miss., 1918	1920	1920
Townsend, M. L., Charlotte, Curtis Institute, Ind., 1906	1912	1919
Tucker, John H., Charlotte, Univ. of Va., 1899	1899	1911
Tydeman, F. W. L., Wood River, Ill., N. C. Med. Coll., 1912	1912	1918
Wakefield, Harry A., Charlotte, N. C. Med. Coll., 1908	1908	1911
Walker, L. D., Charlotte, Med. Coll. of Va., 1908	1917	1919
Warren, A. J., Charlotte, Tulane Univ., 1914	1914	1919
Whisnant, Albert M., Charlotte, P. and S., Balt., 1893	1893	1899

Name and Address	*Licensed*	*Joined State Society*
Wingate, G. C., Charlotte, N. C. Med. Coll., 1914	1915	1919
Wishart, Wm. E., Charlotte, N. C. Med. Coll., 1911	1911	1911
Witherspoon, B. J., Charlotte, S. C. Med. Coll., 1894	1900	1911
Worthington, F. D., Charlotte, Johns Hopkins Univ., 1917	1921	1922
Wright, Thomas H., Charlotte, Univ. of Va., 1901	1904	1910

MITCHELL-WATAUGA COUNTY SOCIETY

President,		
Secretary, R. B. Butt, Bakersville, Emory University, Atlanta, 1920	1920	1921
Bingham, G. D., Sugar Grove, Univ. of Tenn., 1906		1920
Bradshaw, Isaac W., Relief, Lincoln Univ., Tenn., 1911		1909
Butt, Virgil R., Bakersville, Jeff. Med. Coll., 1886		1907
Gouge, A. E., Bakersville, N. C. Med. Coll., 1917	1917	1920
Hardin, R. H., Boone, Univ. of N. C., 1914	1914	1919
Jones, J. Walter, Boone, Chattanooga Med. Coll., 1900	1902	1904
Perry, H. B., Valle Crucis, Univ. of N. C., 1905	1905	1922
Peterson, C. A., Spruce Pine, N. C. Med. Coll., 1907	1907	1908
Peterson, J. M., Spruce Pine, Lincoln Mem. Univ., 1902	1918	1921

MONTGOMERY COUNTY SOCIETY

President, A. F. Thompson, Troy, Med. Coll. of Indiana, 1895	1895	1904
Secretary, Charles Daligny, Troy, Military Med. School, Paris, France, 1878	1885	1891
Boyles, A. C., Troy, Univ. of Md., 1887	1887	1912
Coppedge, Neilson P., Biscoe, Univ. of N. C., 1903	1903	1910
Dameron, Ernest L., Star, N. C. Med. Coll., 1911	1911	1913
Ingram, Charles B., Mt. Gilead, Jeff. Med. Coll., 1886	1886	1902
McMillan, J. M., Candor, Atlanta P. and S., 1909	1909	1911
Nicholson, N. G., Jr., Mt. Gilead, N. C. Med. Coll., 1917	1917	1920
Rankin, Pressly R., Mt. Gilead, N. C. Med. Coll., 1910	1910	1912
Shamburger, John B., Star, Univ. of Md., 1890	1890	1892

MOORE COUNTY SOCIETY

President, M. E. Street, Glendon, P. and S., Balt., 1893	1893	1902
Secretary, A. McNiel Blair, Southern Pines, Univ. of N. Y., 1897	1905	1906
Achorn, John W., Pine Bluff, Me. Med., 1887; Bellevue, 1889	1899	1899
Blue, A. McN., Carthage, Tulane Univ., 1915	1916	1917
Bowman, H. E., Aberdeen, N. C. Med. Coll., 1904	1904	1919
Davis, J. Franklin, High Falls, Med. Coll. of Va., 1912	1912	1914
Dickie, J. W., Southern Pines, Jeff. Med. Coll., 1918	1920	1921
Grier, Chas. P., Carthage, N. C. Med. Coll., 1910	1912	1913
Holt, Erastus E., Southern Pines, Columbia Univ., 1875	1921	1922
McBrayer, L. B., Sanatorium, P. and S., Balt., 1891	1891	1899
McDonald, A. A., Jackson Springs, N. C. Med. Coll., 1905	1905	1912
McDuffie, W. N., Hemp, Emory Univ., 1916	1916	1921

Name and Address	Licensed	Joined State Society
McLeod, A. H., Aberdeen, Balt. Med. Coll., 1896	1896	1904
McLeod, Gilbert M., Carthage, Univ. of Md., 1882	1885	1904
Marr, M. W., Pinehurst, Tufts Coll. of Med., 1907	1907	1915
Milliken, J. S., Southern Pines, Jeff. Med. Coll., 1915	1915	1916
Mudgett, W. C., Southern Pines, Univ. of Md., 1903	1908	1911
O'Briant, A. L., Cameron, Jeff. Med. Coll., 1920	1920	1922
Rosser, R. G., Vass, N. C. Med. Coll., 1909	1909	1917
Shields, Henry B. Carthage, Atlanta Med. Coll., 1882	1887	1904
Thompson, Fred, Pine Bluff, Harvard Univ., 1888	1912	1914

NASH COUNTY SOCIETY

President, J. A. Winstead, Nashville, N. C. Med. Coll., 1914	1916	1916
Secretary, W. H. Dixon, Rocky Mount, Univ. of Pa., 1919	1919	1922
Battle, Ivan P., Rocky Mount, Univ. of Md., 1889	1889	1914
Battle, James P., Nashville, Univ. of Md., 1889	1888	1904
Boice, E. S., Rocky Mount, Univ. of Pa., 1909	1914	1915
Brantley, Julian C., Spring Hope, Univ. of Pa., 1888	1888	1922
Coppedge, T. O., Nashville, P. and S., Balt., 1908	1909	1917
Deans, A. W., Battleboro, Med. Coll. of Va., 1915	1915	1917
Fleming, M. I., Rocky Mount, Jeff. Med. Coll., 1905	1906	1919
Hines, E. R., Rocky Mount, Med. Coll. of S. C., 1916	1916	1917
Killinger, R. R., Rocky Mount, Yale Med. Coll., 1919		1921
Knowles, D. L., Rocky Mount, Univ. of Pa., 1918	1918	1920
Kornegay, Lemuel W., Rocky Mount, N. C. Med. Coll., 1906	1906	1914
Lane, John L., Rocky Mount, N. C. Med. Coll., 1906	1906	1914
Large, H. Lee, Rocky Mount, Med. Coll. of Va., 1917	1918	1918
Looney, J. J. W., Rocky Mount, Univ. of Va., 1919	1919	1919
Marriott, Henry B., Battleboro, Med. Coll. of St. Louis, 1883	1883	1904
Martin, J. H., Battleboro, R. F. D., Univ. of Nashville, 1903	1904	1916
Matthews, Thomas A., Castalia, Univ. of Md., 1890	1891	1893
Noell, R. H., Rocky Mount, Univ. of Md., 1916	1916	1920
Perry, E. M., Rocky Mount, P. and S., Balt., 1907	1907	1920
Quillen, Emile B., Rocky Mount, Univ. of Md., 1904	1906	1914
Smith, C. T., Rocky Mount, Univ. of Pa., 1918	1918	1920
Speight, J. A., Rocky Mount, Jeff. Med. Coll., 1906	1906	1916
Speight, J. P., Rocky Mount, Jeff. Med. Coll., 1906	1906	1917
Staley, S. Walter, Rocky Mount, Med. Coll. of S. C., 1901	1901	1914
Wheless, J. R., Spring Hope, Univ. of Md., 1891	1891	1920
Whitehead, J. P., Rocky Mount, Univ. of Md., 1899	1899	1914
Willis, B. C., Rocky Mount, Med. Coll. of Va., 1909	1915	1916
Wimberly, G. L., Rocky Mount, Univ. of Md., 1883	1883	1916

NEW HANOVER COUNTY SOCIETY

President, Edward J. Wood, Wilmington, Univ. of Pa., 1902	1903	1903
Secretary, Ralph H. Davis, Wilmington, George Washington Univ., 1917	1920	1920

Name and Address	*Licensed*	*Joined State Society*
Bellamy, Robt. H., Wilmington, Jeff. Med. Coll., 1902	1902	1902
Bolles, Chas. P., Jr., Wilmington, Univ. of Va., 1897	1908	1909
Bowdoin, Geo. W., Wilmington, Med. Coll. of Va., 1914	1914	1916
Brown, James, Baltimore, Md., Univ. of Md., 1919	1919	1921
Bulluck, Ernest S., Wilmington, Univ. of Md., 1911	1911	1911
Cathell, J. E., Wilmington, Univ. of Md., 1899	1902	1906
Codington, H. A., Wilmington, Univ. of Md., 1911	1915	1917
Cranmer, J. B., Wilmington, Univ. of N. C., 1905	1905	1907
Croom, G. H., Wilmington, N. C. Med. Coll., 1909	1909	1916
Crouch, A. McR., Wilmington, Jeff. Med. Coll., 1916	1916	1918
Elliott, A. H., Wilmington, Jeff. Med. Coll., 1919	1919	1921
Evans, J. E., Wilmington, Univ. of Md., 1916	1916	1916
Farthing, L. E., Wilmington, Univ. of N. C., 1906	1906	1913
Freeman, Jere, Wilmington, Med. Coll. of Va., 1918	1921	1922
Galloway, W. C., Wilmington, (Hon.), Wash. Univ., Balt., 1874	1880	1880
Graham, Benj. R., Wilmington, Univ. of Va., 1895	1895	1916
Green, Thomas M., Wilmington, Univ. of Md., 1900	1900	1904
Hamilton, John H., Wilmington, Univ. of Mass., 1916	1916	1922
Harriss, Andrew H., Wilmington, Medico-Chir., Phila., 1893	1892	1894
Hart, E. R., Wilmington, Univ. of Md., 1901	1901	1918
Hoggard, J. T., Wilmington, Univ. Med. Coll., Richmond, 1900	1907	1922
Honnet, Joseph H., Wilmington, P. and S., Balt., 1896	1901	1904
Hooper, Jos. W., Wilmington, Univ. of Md., 1909	1912	1919
Jewett, Robt. D., Wilmington, (Hon.), Univ. of Va., 1888	1890	1890
Johnson, Geo. W., Wilmington, Univ. of Pa., 1920	1920	1921
Koonce, S. Everett, Wilmington, P. and S., Balt., 1896	1896	1900
Legwin, John B., Wilmington, Tulane Univ., 1911	1913	1916
Love, W. J., Wilmington, (Hon.), S. C. Med. Coll., 1861	1861	1874
McDonald, A. D., Wilmington, (Hon.), Wash. Univ. Med. Sch., 1877	1870	1879
McMillan, W. D., Wilmington, (Hon.), Univ. of Md., 1868	1885	1892
Mebane, W. C., Wilmington, N. C. Med. Coll., 1905	1905	1916
Miller, J. F., Wilmington, Med. Chi., Phila., 1906	1915	1919
Moore, Julian A., Wilmington, Univ. of Pa., 1918	1918	1921
Moore, Wm. H., Wilmington, Jeff. Med. Coll., 1910	1910	1911
Murphy, John G., Wilmington, Univ. of Louisville, 1903	1903	1905
Page, B. W., Wilmington, Tulane Univ., 1909	1909	1919
Parker, J. R., Wilmington, Med. Coll. of Va., 1917	1917	1917
Peterson, W. C., Wilmington, Univ. of Pa., 1916	1920	1921
Robertson, James F., Wilmington, Univ. of Pa., 1913	1913	1916
Schonwald, John T., Wilmington, (Hon.), L. I. Med. Coll., 1879	1880	1881
Shaw, Colin, Wilmington, N. C. Med. Coll., 1911	1911	1917
Sidbury, J. B., Wilmington, Columbia Univ., N. Y., 1912	1915	1916
Sloan, D. B., Wilmington, Univ. of Pa., 1914	1914	1920
Slocum, R. B., Wilmington, Johns Hopkins Univ., 1905	1907	1907
Smith, Slade A., Wilmington, N. C. Med. Coll., 1907	1907	1921
Weathers, Bahnson, Wilmington, Univ. of St. Louis, 1917	1921	1922
Wessell, John C., Wilmington, Univ. of Md., 1900	1900	1900

Name and Address	Licensed	Joined State Society
Williams, L. P., Wilmington, Bellevue Med. Coll., 1918	1918	1921
Wysong, H. C., Wilmington, Univ. of Tenn., 1911	1921	1922

NORTHAMPTON COUNTY SOCIETY

President, L. E. McDaniel, Lasker, Univ. of Md., 1911	1915	1916
Secretary, Walter R. Parker, Woodland, Med. Coll. of Va., 1916	1916	1919
Boone, S. B., Jackson		1921
Brittle, Paul C., Conway, Univ. Coll. of Med., Va., 1907	1907	1910
Lewis, H. W., Jackson, (Hon.), Univ. of N. Y., 1877	1885	1887
Lister, J. L., Jackson, Med. Coll. of Va., 1896	1896	1909
Outland, C. L., Woodland, Med. Coll. of Va., 1917	1917	1920
Parker, Clifton G., Woodland, Univ. of Va., 1907	1907	1913
Parker, C. P., Seaboard, Univ. Coll. of Med., Va., 1915	1915	1916
Parker, Paul G., Jackson, Med. Coll. of Va., 1916	1916	1917
Vaughan, J. C., Rich Square, Med. Coll. of Va., 1915	1915	1916

ONSLOW COUNTY SOCIETY

President,		
Secretary,		
Bryan, Lorenzo D., Sneads Ferry, Tulane Univ., 1910	1910	1911
Cox, E. L., Jacksonville, Univ. of Md., 1889	1892	1892
Henderson, John P., Swansboro, Va. Med. Coll., 1918	1919	1921
Kellum, B. E., Jacksonville		1922
McCuiston, A. M., Richlands, N. C. Med. Coll., 1911	1911	1917
Sutton, Carl W., Richlands, Tulane Med. Coll., 1905	1905	1907
Thompson, Cyrus, Jacksonville, Univ. of Pa., 1878	1885	1905

PAMLICO COUNTY SOCIETY

President, D. A. Dees, Bayboro, Balt. Med. Coll., 1903	1903	1905
Secretary, J. J. Purdy, Oriental, Med. Coll. of Va., 1900	1914	1915
Attmore, Geo. S., Stonewall, (Hon.), Wash. Univ. Sch., 1870	1870	1872
McCotter, St. Elmo, Bayboro, P. and S., Atlanta, 1908	1908	1909
Woodard, E. D., Bayboro, Chicago Coll. M. and S., 1919	1920	1921

PASQUOTANK-CAMDEN-DARE COUNTY SOCIETY

President, John Saliba, Elizabeth, Univ. of Edinburgh, Scotland, 1893	1914	1914
Secretary, Howard J. Combs, Elizabeth City, Jefferson Med. Coll., 1918	1918	1919
Bulla, M. S., Elizabeth City, Miama Med. Coll., O., 1905	1921	1922
Davis, R. B., Weeksville, Med. Coll. of Va., 1915	1916	1917
Fearing, Isaiah, Elizabeth City, P. and S., Balt., 1896	1896	1904
Fearing, Zenas, Elizabeth City, Va. Univ. Coll. of Med., 1901	1901	1914
Gates, Franklin P., Manteo, Bellevue Hosp. Med. Coll., 1886	1886	1892

Name and Address	*Licensed*	*Joined State Society*
Gordon, P. L., Elizabeth City, Univ. Coll. of Med., Va., 1898	1921	1922
Griggs, John B., Elizabeth City, Univ. of Md., 1892	1892	1904
Hoggard, Wm. A., Hertford, Rt. 3, Va. Univ. Coll. of Med., 1907	1907	1910
Hoyle, Hugh B., Manteo, N. C. Med. Coll., 1896	1896	1904
Kendrick, R. L., Elizabeth City, Univ. of Va., 1913	1913	1915
Lister, E. W., Weeksville, Med. Coll. of Va., 1896	1896	1916
Newby, G. E., Hertford, Jeff. Med. Coll., 1900	1901	1916
Peters, W. A., Elizabeth City, Med. Coll. of Va., 1915	1915	1916
Sawyer, W. W., Elizabeth City, Univ. of Md., 1903	1903	1904
Stephens, W. L., Shiloh, Univ. Coll. of Va., 1912	1912	1914
Walker, H. D., Elizabeth City, Univ. of Md., 1902	1902	1902
Williams, Claude B., Elizabeth City, Va. Coll. of Med., 1903	1903	1907

PENDER COUNTY SOCIETY

President,		
Secretary,		
Orr, W. J. B., Iaeger, W. Va., Univ. of Md., 1920	1920	1922
Taylor, W. I., Burgaw, N. C. Med. Coll., 1902	1904	1905

PERSON COUNTY SOCIETY

President, David T. Long, Hurdle Mills, Emory Univ. of Med., Atlanta, 1917	1917	1919
Secretary, Austin F. Nichols, Roxboro, Univ. of N. C., 1909	1908	1909
Baynes, R. S., Hurdle Mills, P. and S., Balt., 1881	1881	1904
Bradsher, Wm. A., Roxboro, Univ. of Md., 1904	1904	1905
Gentry, Geo. W., Timberlake, Univ. of N. C., 1910	1910	1911
Long, Walter T., Roxboro, Balt. Med. Coll., 1905	1905	1907
Love, Bedford E., Roxboro, Univ. of Md., 1904	1904	1905
Merritt, John H., Woodsdale, Rt. 2, Univ. of N. C., 1906	1907	1908
Swann, Jos. F., Semora, P. and S., Balt., 1896	1896	1905
Thaxton, B. A., Roxboro, Jeff. Med. Coll., 1914	1914	1916

PITT COUNTY SOCIETY

President, G. G. Dixon, Ayden, Med. Coll. of Va., Richmond, 1915	1915	1917
Secretary,		
Basnight, Thomas G., Stokes, Univ. of Md., 1905	1905	1907
Beasley, E. B., Fountain, Univ. of Pa., 1911	1911	1915
Chester, P. J., Greenville, N. C. Med. Coll., 1913	1913	1920
Cox, B. T., Winterville, Univ. of Md., 1888	1888	1890
Dawson, Walter W., Grifton, Univ. of Md., 1897	1897	1900
Dixon, Joseph, Ayden, Med. Coll. of Va., 1894	1894	1895
Dixon, Wm. H., Ayden, Univ. of Va., 1901	1901	1903
Ellen, C. J., Greenville, Univ. Coll. of Richmond, 1911	1911	1919
Frizzell, M. T., Ayden, Univ. of Md., 1907	1907	1909
Garrenton, Cecil, Bethel, Med. Coll. of Richmond, 1908	1908	1915

Name and Address	*Licensed*	*Joined State Society*
Green, J. C., Greenville, Med. Coll. of Va., 1900	1900	1915
Hemmingway, J. D., Bethel, N. C. Med. Coll., 1915	1917	1917
Jones, C. M., Grimesland, Univ. of Md. and P. and S., Balt., 1892	1892	1895
Laughinghouse, Chas. O'H., Greenville, Univ. of Pa., 1893	1893	1894
Morrill, D. S., Farmville, Balt. Med. Coll., 1897	1897	1903
Morrill, Jenness, Falkland, Univ. of Md., 1888	1888	1900
Moseley, H. P., Farmville, Univ. Coll. of Med., Richmond, 1912	1912	1915
Nobles, Jos. E., Greenville, (Hon.), Jeff. Med. Coll., 1899	1899	1902
Pace, K. B., Greenville, Jeff. Med. Coll., 1914	1914	1920
Skinner, Louis C., Greenville, Univ. of Md., 1901	1901	1903
Smith, Joseph, Greenville, Med. Coll. of Va., 1914	1916	1920
Summerell, G. H., Ayden, Med. Coll. of Va., 1915	1917	1918
Whitfield, Wm. C., Grifton, (Hon.), Univ. of Md., 1884	1884	1884

RANDOLPH COUNTY SOCIETY

President, C. S. Tate, Ramseur, Baltimore, Md. Coll., 1893	1896	1914
Secretary, Wm. J. Moore, Ashboro, P. and S., Baltimore, 1893	1893	1901
Asbury, Francis E., Ashboro, (Hon.), S. C. Med. Coll., 1876	1899	1904
Craven, F. C., Ramseur, Univ. of Md., 1913	1913	1914
Fox, Thomas I., Franklinville, Vanderbilt Univ., 1894	1899	1904
Hayworth, C. A., Ashboro, Univ. of Md., 1902	1913	1914
Helms, T. L., Seagrove, N. C. Med. Coll., 1914	1915	1917
Hubbard, Charles C., Farmer, Jeff. Med. Coll., 1888	1890	1904
Hunter, J. V., Ashboro, Univ. of Louisville, 1898	1898	1905
Myers, R. W., Fullers, Rt. 1, Grant Univ., 1897		1909
Redding, Alex. H., Cedar Falls, P. and S., Balt., 1887	1881	1904
Shepard, F. H., Liberty, Univ. of Tenn., 1908	1908	1919
Sumner, Wm. I., Randleman, Univ. of Tenn., 1893	1893	1904
Wilkerson, Chas. E., Randleman, Univ. of Nashville, 1907	1908	1909

RICHMOND COUNTY SOCIETY

President, W. D. James, Hamlet, Jefferson Med. Coll., 1908	1908	1915
Secretary, A. C. Everett, Rockingham, Univ. of Maryland, 1897	1897	1903
Garrett, F. B., Rockingham, N. C. Med. Coll., 1912	1912	1914
Garrett, F. J., Rockingham, Univ. of Md., 1889	1887	1904
Hatcher, M. A., Hamlet, Med. Coll. of Va., 1918	1920	1921
Howell, W. L., Ellerbe, N. C. Med. Coll., 1910	1910	1911
James, Albert W., Hamlet, Jeff. Med. Coll., 1918	1918	1921
Kinsman, Henry F., Hamlet, Univ. of Vermont, 1894	1897	1904
Ledbetter, Jas. McQ., Rockingham, Vanderbilt Univ., 1894	1894	1903
McIntosh, W. R., Roberdell, N. C. Med. Coll., 1913	1916	1917
McPhail, L. D., Rockingham, Univ. of Md., 1900	1900	1902
Maness, J. M., Ellerbe, Univ. of N. C., 1909	1909	1910
Terry, Wm. C., Hamlet, N. C. Med. Coll., 1911; Univ. of Md., 1912	1912	1914

ROBESON COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President, E. L. Bowman, McDonalds, Med. Coll. of Va,, 1914	1914	1916
Secretary, E. R. Hardin, Lumberton, Univ. of Georgia, 1911	1911	1920
Andrews, Nathan H., Rowland, N. C. Med. Coll., 1911	1911	1912
Baker, Horace M., Lumberton, Harvard Med. Sch., 1917	1917	1919
Beam, R. S., Lumberton, Jeff. Med. Coll., 1912	1912	1915
Brown, J. P., Fairmont, Univ. of Md., 1883	1887	1893
Carmichael, T. W., Rowland, Ky. Univ. of Med., 1904	1911	1919
Costner, Thos. F., Lumberton, Jeff. Med. Coll., 1882	1885	1918
Currie, D. S., Parkton, N. C. Med. Coll., 1906	1906	1907
Evans, W. E., Rowland, Med. Coll. of Va., 1894	1894	1904
Hall, P. B., Pembroke, N. C. Med. Coll., 1903	1903	1904
Hays, A. H., Fairmont, Univ. of Ga., 1917	1917	1919
Hodgin, H. H., Red Springs, Univ. of Md., 1905	1906	1907
Johnson, C. T., Red Springs, Jeff. Med. Coll., 1920	1920	1922
Johnson, Thos. C., Lumberton, Med. Coll. of Va., Richmond, 1903	1903	1903
McClelland, Joseph O., Maxton, Med. Coll. of Va., 1908	1912	1913
McKay, Red Springs, Tulane Univ., 1916	1916	1921
McMillan, Benj. F., Red Springs, (Hon.), Univ. of Md., 1882	1884	1884
McMillan, R. D., Red Springs, Univ. of Md., 1910	1911	1912
Martin, J. A., Lumberton, Med. Coll. of Va., 1915	1915	1917
Nash, J. Fred, St. Pauls, N. C. Med. Coll., 1914	1914	1916
Norman, J. S., Boardman, P. and S., Balt., 1909	1911	1920
Pope, Henry T., Lumberton, N. C. Med. Coll., 1894	1893	1902
Poole, Claud T., St. Pauls, N. C. Med. Coll., 1907	1908	1913
Price, H. L., Fairmont, N. C. Med. Coll., 1914	1914	1920
Reedy, Howard, Rowland, Med. Coll. of S. C., 1884	1887	1914
Ricks, Leonard E., Fairmont, Med. Coll. of Va., 1896	1896	1913
Rozier, R. G., St. Pauls, Univ. of Md., 1899	1899	1904
Smith, John McNeill, Rowland, Jeff. Med. Coll., 1908	1908	1909
Stamps, Thos. Lumber Bridge, (Hon.), Univ. of Louisville, 1888	1888	1890
Thompson, Neill A., Lumberton, Maryland Med. Coll., 1905	1895	1904
Watson, Thos. M., Maxton, Tulane Univ., 1919	1919	1920
West, George H., Fairmont, Jeff. Med. Coll., 1892	1916	1919

ROCKINGHAM COUNTY SOCIETY

President, Charles R. Wharton, Ruffin, Med. Coll. of Va., 1897	1897	1904
Secretary, James T. Taylor, Madison, Univ. of Md.; Coll. of P. and S., Balt., 1908	1908	1910
Abernathy, Miles B., Reidsville, N. C. Med. Coll., 1906	1906	1910
Boaz, Thos. A., Stoneville, P. and S., Balt., 1892	1892	1905
Casteen, Kenark, Mayodan, Bellevue and Univ., N. Y., 1919	1919	1921
Cummings, M. P., Reidsville, Jeff. Med. Coll., 1911	1911	1914
Dillard, G. P., Draper, Chicago Coll. of M. and S., 1916	1916	1919
Dixon, Hubert C., Madison, Univ. and Bellevue Med. Coll., 1916	1916	1921
Ellington, S. B., Wentworth, Wash. Univ. Sch. of Med., 1872	1885	1904
Fetzer, P. W., Madison, Univ. of Va., 1916	1916	1920

Name and Address	Licensed	Joined State Society
Jett, Samuel G., Reidsville, Univ. of the South, 1903	1908	1911
Johnson, W. A., Reidsville, R. F. D., N. C. Med. Coll., 1907	1909	1910
McBryde, M. H., Reidsville, Univ. Coll. of Med., Richmond, 1901	1901	1904
McGehee, John Wm., Reidsville, Univ. of Md., 1904	1904	1905
Martin, Sydnor L., Leaksville, Balt. Med. Coll., 1892	1892	1904
Matthews, Wm. W., Spray, Chicago Coll. of Med. and Sur., 1913	1915	1918
Pratt, Thos. R., Madison		1922
Ray, John B., Leaksville, Balt. Med. Coll., 1898	1898	1898
Stewart, J. T., Summerfield, R. F. D.	1889	1898
Stokes, P. B., Ruffin, Med. Coll. of Va., 1917	1917	1920
Taylor, T. G., Leaksville, Ky., School of Med., 1877	1877	1910
Thacker, J. H., Reidsville, Medico-Chir. Coll., Phila., 1889	1889	1921
Tuttle, A. F., Spray, N. C. Med. Coll., 1901	1901	1907
Webb, S. Edgar, Draper, N. C. Med. Coll., 1908	1908	1916
Wilson, W. P., Madison, N. C. Med. Coll., 1908	1908	1916

ROWAN COUNTY SOCIETY

President,		
Secretary, James Ernest Stokes, Salisbury	1900	1901
Armstrong, C. W., Salisbury, Univ. of Md., 1914	1914	1915
Black, O. R., Landis, N. C. Med. Coll., 1914	1914	1918
Boger, D. T., Rockwell, N. C. Med. Coll., 1906	1906	1921
Boyden, Wm. C., China Grove, N. C. Med. Coll., 1913	1913	1914
Brawley, M. H., Salisbury, N. C. Med. Coll., 1910	1912	1914
Brawley, Robt. V., Salisbury, Univ. Coll. of Med., Va., 1903	1903	1904
Brown, Clarence E., Faith, N. C. Med. Coll., 1918	1918	1921
Brown, G. A., Mt. Ulla, Univ. of Va., 1897	1897	1898
Busby, Julian G., Spencer, Univ. of Md., 1904	1904	1905
Choate, G. Wm., Salisbury, Univ. Med. Coll. of Va., 1909	1909	1909
Council, J. B., Salisbury, (Hon.), P. and S., Balt., 1884	1885	1885
Ellis, Frank A., Salisbury, Univ. of Pa., 1919	1919	1919
Fleming, G. M., Cleveland, Emory University, 1919	1921	1921
Heilig, Herman G., Salisbury, Univ. of Md., 1899	1899	1904
McKenzie, B. W., Salisbury, Jeff. Med. Coll., 1916	1916	1920
McKenzie, Wm. W., Salisbury, Jeff. Med. Coll., 1893	1893	1894
Marsh, Frank B., Salisbury, Jeff. Med. Coll., 1919	1919	1922
Monk, Henry L., Salisbury, Med. Coll. of Va., 1897	1899	1903
Newman, Harold H., Salisbury, Johns Hopkins Univ., 1913	1914	1916
Peeler, Jno. H., Salisbury, Va. Univ. Coll. of Med., 1899	1899	1904
Ramseur, Geo. A., China Grove, Jeff. Med. Coll., 1880	1886	1887
Shafer, Irving E., Salisbury, N. C. Med. Coll., 1914	1914	1914
Sigman, Fred. G., Spencer, Univ. Med. Coll. of Va., 1909	1909	1910
Slate, Wesley C., Spencer, Univ. of Tenn., 1903	1909	1913
Spencer, Fred. B., Salisbury, Univ. of N. C., 1909	1909	1911
Summerell, E. M., China Grove, (Hon.), Univ. of Pa., 1883	1883	1883
Trantham, H. T., Salisbury, (Hon.), Univ. of N. Y., 1875	1878	1879
Van Poole, C. M., Salisbury, (Hon.), P. and S., Balt., 1880	1880	1880

Name and Address	*Licensed*	*Joined State Society*
West, Robert M., Salisbury, Med. Coll. of Va., 1904	1900	1904
Whitehead, John, Salisbury, (Hon.), Univ. of Pa., 1880	1880	1880
Woodson, Chas. W., Salisbury, P. and S., N. Y., 1904	1904	1907

RUTHERFORD COUNTY SOCIETY

President, F. W. F. Logan, Rutherfordton, N. C. Med. Coll., 1916	1916	1919
Secretary, William C. Bostic, Forest City, N. C. Med. Coll., 1905	1905	1905
Allhands, John M., Cliffside, Chicago Coll. Med. and Surg., 1910	1910	1911
Biggs, Montgomery H., Rutherfordton, Univ. of Pa., 1897	1907	1908
Buchanan, C. L., Union Mills, Univ. of Nashville, 1910	1910	1914
Crawford, Robt. H., Rutherfordton, Johns Hopkins Univ., 1914	1920	1912
Duncan, A. E., Avondale, N. C. Med. Coll., 1919	1919	1920
Gold, Chas. F., Ellenboro, Univ. of N. C., 1910	1910	1911
Harrill, L. B., Caroleen, Grant Univ., 1897	1902	1904
Hicks, Romeo, Henrietta, So. Med. Coll., Atlanta, 1888	.....	1889
Lovelace, T. C., Henrietta, N. C. Med. Coll., 1917	1920	1920
Norris, Henry, Rutherfordton, Univ. of Pa., 1896	1907	1908
Norris, Philip, Rutherfordton, Univ. of Pa., 1903	1908	1909
Reid, Geo. P., Forest City, Univ. Coll. of Med., Va., 1895	1894	1899
Rucker, Adin Adam, Uree, Univ. of Md., 1908	1908	1909
Scruggs, F. B., Cliffside, Jeff. Med. Coll., 1919	1919	1922
Thompson, W. A., Rutherfordton, P. and S., Balt., 1885	1895	1904
Twitty, John C., Rutherfordton, Balt. Med. Coll., 1892	1892	1904

SAMPSON COUNTY SOCIETY

President, O. L. Parker, Clinton, Med. Coll. of Va., 1918	1918	1919
Secretary, E. T. Hollingsworth, Clinton, N. C. Med. Coll., 1912	1912	1915
Brewer, J. Street, Roseboro, Jeff. Med. Coll., 1919	1919	1921
Crumpler, Paul, Clinton, Univ. of Tenn., 1907	1907	1908
Kerr, John D., Clinton, Univ. of Md., 1908	1908	1910
Matthews, James O., Clinton, R. F. D., Va., Univ. Coll. of Med., 1879	1879	1902
Parker, J. R., Clinton, Univ. of Md.	.....	1919
Sessoms, E. T., Autryville, N. C. Med. Coll., 1915	1915	1917
Sloan, Wm. H., Garland, P. and S., Balt., 1916	1916	1920
Sykes, Gibson L., Salemburg, Va. Univ. Coll. of Med., 1900	1900	1902
Underwood, O. E., Roseboro, Va. Univ. Coll. of Med., 1909	1909	1910
Wilson, Robt. B., Newton Grove, Ky. School of Med., 1889	1889	1904

SCOTLAND COUNTY SOCIETY

President, James G. Pate, Gibson, Univ. of Pa., 1905	1905	1917
Secretary, Edward A. Livingston, Gibson, Univ. of Md., 1912	1912	1913
Cannaday, N. B., Laurinburg, Univ. of N. C., 1912	1912	1916
Erwin, Evan A., Laurinburg, Med. Coll. of S. C., 1912	1913	1913
Gibson, John S., Gibson, Univ. of Md., 1905	1905	1907

Name and Address	*Licensed*	*Joined State Society*
Hunter, N. C., Laurinburg, Medico-C. of Phila., 1899	1899	1917
James, F. P., Laurinburg, Jeff. Med. Coll., 1908	1908	1908
John, Peter, Laurinburg, Univ. of Md., 1897	1897	1904
McLean, Allen, Wagram, Univ. of Md., 1908	1908	1911
McLean, Peter, Laurinburg, Univ. of Md., 1906	1907	1908
Shaw, W. G., Wagram, P. and S., Balt., 1892	1895	1904
Wilcox, J. W., Laurel Hill, Univ. of N. C., 1906	1906	1906

STANLY COUNTY SOCIETY

President, Julius C. Hall. Albemarle, Univ. Coll. of Med., Va., 1890	1899	1908
Secretary, Lucius V. Dunlap, Albemarle, Univ. of N. C., 1909	1909	1910
Allen, Jos. A., New London, Va. Univ. Coll. of Med., 1901	1901	1904
Anderson Jasper N., Albemarle, Univ. of Md., 1895	1895	1895
Cox, Benj. F., Palmerville, P. and S., Balt., 1886	1886	1908
Hathcock, Thos. A., Norwood, Univ. of Md., 1893	1893	1904
Hill, Wm. Isaac, Albemarle, Univ. of Md. and P. and S., Balt. 1897	1897	1904
Laton, Jas. F., Albemarle, N. C. Med. Coll., 1909	1909	1910
Lentz, C. M., Albemarle, N. C. Med. Coll., 1909	1909	1910
Moore, D. Bain, Badin, Va. Univ. Coll. of Med., 1913	1913	1915
Shaver, W. T., Badin, Univ. of Md., 1918	1920	1921

STOKES COUNTY SOCIETY

President, J. L. Hanes, Pine Hall, P. and S., Balt., 1902	1902	1920
Secretary, C. J. Helsabeck, Germanton, Univ. of Maryland, 1902	1902	1919
Ellington, Jas. H., Sandy Ridge, P. and S., Balt., 1872	1885	1904
Fulp, Elias, Fulp, N. Y. Univ. Med. Coll., 1882	1885	1896
Helsabeck, R. S., Mizpah, N. C. Med. Coll., 1913	1913	1920
Jones, A. G., Walnut Cove, Univ. of N. Y., 1868	1894	1904
McCanless, Wm. V., Danbury, Univ. of N. Y., 1893	1893	1904
Moorefield, R. H., Westfield, Rt. 1, N. C. Med. Coll., 1906	1906	1917
Phillips, M. D., Dalton, N. Y. Univ. Med. Coll., 1880	1881	1882
Stone, Grady E., King, Med. Coll. of Va., 1915	1915	1920
Tillotson, R. F., King, N. C. Med. Coll., 1905	1905	1922
Tuttle, Reuben G., Walnut Cove, N. C. Med. Coll., 1909	1909	1913

SURRY COUNTY SOCIETY

President, W. M. Stone, Dobson, N. C. Med. Coll., 1904	1906	1907
Secretary, J. B. Smith, Pilot Mountain, P. and S., Balt., 1884	1885	1896
Ashby, E. C., Mt. Airy, Univ. of Pa., 1914	1914	1916
Ashby, Thos. B., Mt. Airy, P. and S., Balt., 1885	1885	1896
Baird, C. A., Mt. Airy, N. C. Med. Coll., 1904	1904	1912
Bernard, Holman, Pinnacle, Med. Coll. of Va., 1912	1914	1919

Name and Address	*Licensed*	*Joined State Society*
Flippin, R. E. L., Pilot Mountain, Balt. Med. Coll., 1892	1897	1901
Flippin, Samuel T., Siloan, N. C. Med. Coll., 1898	1898	1898
Garvey, R. R., State Road, N. C. Med. Coll., 1915	1915	1919
Hollingsworth, E. M., Mt. Airy, Va. Univ. Coll. of Med., 1898	1898	1904
Hollingsworth, R. E., Mt. Airy, Va. Univ. Coll. of Med., 1904	1899	1904
Lancaster, R. M., Dobson, N. C. Med. Coll., 1914	1916	1917
Lovill, Robt. J., Mt. Airy, Univ. of Md., 1910	1910	1912
Martin, Moir S., Mt. Airy, Va. Univ. Coll. of Med., 1905	1909	1916
Moorefield, L. J., Mt. Airy, N. C. Med. Coll., 1913	1922	1922
Reece, Jas. M., Elkin, P. and S., Balt., 1886	1886	1904
Ring, Jos. W., Elkin, P. and S., Balt., 1880	1885	1904
Rowe, H. B., Mt. Airy, Univ. of Md., 1910	1910	1914
Royall, M. A., Elkin, P. and S., Balt., 1885	1885	1913
Salmons, H. C., Jonesville, N. C. Med. Coll., 1904	1904	1908
Smith, Jas. T., Westfield, N. C. Med. Coll., 1898	1899	1918
Taylor, Wm. S., Mt. Airy, Jeff. Med. Coll., 1874	1874	1894
Wellborn, Wm. R., Elkin, N. C. Med. Coll., 1905	1908	1913
Williams, Lester L., Mt. Airy, Md. Med. Coll., 1913	1913	1916
Woltz, John L., Mt. Airy, So. Med. Coll. of Ga., 1897	1902	1904

SWAIN COUNTY SOCIETY

President,		
Secretary,		
Clark, W. H., Dorsey		1922
DeHart, Jas. S., Bryson City, Univ. of Nashville, 1900	1900	1917
Holt, R. D., Cherokee, Med. Coll. of Va., 1899	1899	1904
Tidmarsh, H. W., Whittier, Univ. of N. C., 1914	1916	1920

TRANSYLVANIA COUNTY SOCIETY

President,		
Secretary,		
English, Edwin S., Brevard, Univ. of the South, 1901	1902	1904
English, E. L., Rosman, Univ. of Ga., 1916	1916	1922
Lyday, Abram E., Penrose, Lincoln Mem. Univ., 1891	1909	1904
Lyday, Wm. Monroe, Brevard, Univ. of Md., 1885	1885	1904
Summey, T. J., Brevard, Jeff. Med. Coll., 1915	1915	1916

UNION COUNTY SOCIETY

President, George B. Nance, Monroe, Jeff. Med. Coll., 1885	1885	1904
Secretary, R. L. Payne, Monroe, Tulane University, 1911	1911	1912
Armfield, Romulus, Marshville, Med. Coll. of Va., 1881	1883	1904
Ashcraft, J. E., Monroe, Univ. of N. Y., 1887	1887	1890
Blair, M. P., Marshville, Med. Coll. of Va., 1895	1895	1895
Garren, R. H., Monroe, Univ. of Nashville, 1900	1901	1917

Name and Address	Licensed	Joined State Society
Jerome, Jas. R., Wingsate, Med. Coll. of Va., 1890	1890	1904
Love, Wm. M., Unionville, N. C. Med. Coll., 1915	1915	1919
McCain, Wm. R., Waxhaw, Univ. of Md., 1897	1898	1898
Neal, John W., Monroe, N. Y. Univ. Med. Coll., 1884	1887	1904
Perkins, David R., Marshville, Balt. Med. Coll., 1903	1906	1907
Pruitt, G. C., Monroe, Atlanta Med, Coll., 1911	1911	1920
Smith, G. M., Monroe, N. C. Med. Coll., 1914	1914	1919
Stevens, Samuel A., Monroe, Univ. of Md., 1898	1898	1898
Stewart, H. D., Monroe, Univ. of Md., 1898	1898	1904
Whitley, A. D. N., Unionville, Univ. of Md., 1897	1897	1904
Williams, Edward J., Monroe, Univ. of N. Y., 1917	1921	1921

VANCE COUNTY SOCIETY

President, H. A. Newell, Henderson, P. and S., Balt., 1906	1906	1907
Secretary, J. H. Wheeler, Henderson, Jeff. Med. Coll., 1918	1918	1920
Allen, Benj. G., Henderson, Bellevue Med. Coll., 1904	1904	1908
Bass, H. H., Henderson, Univ. of Md., 1899	1899	1900
Cheatham, Goode, Henderson, N. C. Med. Coll., 1895	1895	1920
Fenner, Edwin F., Henderson, Univ. of Md., 1905	1906	1908
Gill, Robt. J., Henderson, Univ. of Pa., 1880	1880	1890
Harris, F. R., Henderson, (Hon.) Univ. of Va., 1881	1883	1883
McIntosh, L. C., Henderson, Atlanta Coll. P. and S., 1913	1914	1914
Upchurch, Robt. T., Henderson, Jeff. Med. Coll., 1908	1908	1910

WAKE COUNTY SOCIETY

President, Albert S. Root, Raleigh, Univ. of Pa., 1911	1911	1913
Secretary, B. J. Lawrence, Raleigh, Jeff. Med. Coll., 1919	1919	1920
Abernathy, Claude O., Raleigh, Univ. of N. C., 1906	1906	1907
Adams, R. K., Raleigh, Jeff. Med. Coll., 1912	1912	1916
Anderson, Albert, Raleigh, (Hon.) Univ. of Va., 1888	1888	1890
Ashby, J. M., Raleigh, Univ. of Md., 1905	1921	1922
Barbee, G. S., Zebulon, Univ. of N. C., 1910	1910	1912
Beath, Thomas, Raleigh, Toronto Univ., 1891	1920	1921
Bell, Carl W., Raleigh, P. and S., Balt., 1914	1915	1916
Bell, Geo. M., Wakefield, P. and S., Balt., 1885	1885	1893
Bonner, H. M., Raleigh, Med. Coll. of Va., 1897	1897	1918
Bonner, O. B., Raleigh, Univ. of Md., 1917	1917	1921
Broughton, N. B., Raleigh, Univ. of Pa., 1919	1920	1921
Buchanan, L. T., Raleigh, Jeff. Med. Coll., 1913	1915	1917
Buffalo, J. S., Garner, Balt. Med. Coll., 1900	1900	1904
Bulla, A. C., Raleigh, N. C. Med. Coll., 1915	1915	1918
Burt, Benj. W., Holly Springs, P. and S., Balt., 1886	1886	1904
Campbell, Alton C., Raleigh, Univ. of N. C., 1910	1910	1912
Carroll, E. D. D., Raleigh, Woman's Med. Coll., 1895	1900	1900
Caveness, Zebulon M., Raleigh, Univ. of N. C., 1903	1903	1903

Name and Address	Licensed	Joined State Society
Cheek, C. E., Fuquay Springs, Va. Univ. Coll. of Med., 1912	1912	1914
Cooper, G. M., Raleigh, Va. Univ. Coll. of Med., 1905	1905	1906
Cozart, W. S., Holly Springs, Va. Med. Coll., 1914	1914	1917
Finch, O. E., Apex, Jeff. Med. Coll., 1915	1915	1917
Flowers, C. E., Zebulon, Med. Coll. of Va., 1913	1915	1916
Flowers, Clarence A., Wendell, P. and S., Balt., 1905	1907	1910
Fowler, M. L., Zebulon, P. and S., Balt., 1881	1885	1904
Freeman, R. H., Raleigh, Jeff. Med. Coll., 1908	1908	1919
Gibson, M. R., Raleigh, Univ. of N. C., 1905	1905	1914
Goodwin, A. W., Raleigh, (Hon.) Bellevue Med. Coll., 1887	1887	1887
Haywood, F. J., Raleigh, (Hon.), Bellevue Med. Coll., 1868		1871
Haywood, Hubert, Raleigh, (Hon.) Bellevue Med. Coll., 1879	1879	1879
Haywood, Hubert B., Jr., Raleigh, Univ. of Pa., 1909	1909	1910
Hicks, V. M., Raleigh, Jeff. Med. Coll., 1918	1918	1921
Horton, M. C., Raleigh, Va. Univ. Coll. of Med., 1903	1911	1911
Horton, W. C., Raleigh, P. and S., Balt., 1897	1896	1904
Hunter, J. P., Cary, Jeff. Med. Coll., 1919	1919	1921
Jenkins, Chas. L., Raleigh, N. Y. Univ. Med. Coll., 1890	1890	1894
Johnson, Robt. Wade, Apex, Univ. of Tenn., 1900	1901	1904
Jordan, Thos. M., Raleigh, (Hon.) P. and S., Balt., 1881	1881	1882
Judd, Eugene C., Raleigh, Univ. of Pa., 1911	1911	1912
Judd, Jas. M., Varina, Balt. Med. Coll., 1897	1899	1901
Kitchin, Thurman D., Wake Forest, Jeff. Med. Coll., 1908	1908	1908
Knox, A. W., Raleigh, (Hon.) Bellevue Med. Coll., 1874	1878	1880
Lewis, R. H., Raleigh, (Hon.) Univ. of Md., 1871	1877	1877
Long, E. F., Raleigh, Med. Coll. of Va., 1909	1909	1912
Lowery, Jno. R., Raleigh, Univ. of Md., 1904	1904	1913
McCullers, Jas. J. L., McCullers, P. and S., Balt., 1886	1886	1893
McGeachy, R. S., Raleigh, Bellevue Hosp., 1894	1894	1895
McGee, Jas. Wm., Raleigh, (Hon.) Bellevue Med. Coll., 1888	1888	1888
McKee, John S., Raleigh, Univ. of Md., 1907	1908	1909
Neal, Kemp P., Raleigh, Harvard, 1917	1920	1921
Neal, Paul N., Raleigh, Harvard, 1919	1920	1921
Noble, R. P., Raleigh, Univ. of N. C., 1907	1907	1916
Phillips, J. J., Raleigh, Columbia Univ. P. and S., N. Y., 1894	1905	1907
Proctor, I. M., Raleigh, Univ. of Pa., 1913; U. of Pa., 1915	1915	1917
Rankin, Watson S., Raleigh, Univ. of Md., 1901	1901	1901
Ray, O. L., Raleigh, Va. Univ. Coll. of Med., 1899	1899	1904
Register, F. M., Raleigh, Ky. Sch. of Med., 1893	1891	1918
Riggsbee, A. E., Morrisville, Univ. of N. C., 1909	1909	1911
Rogers, Jas. R., Raleigh, P. and S., Balt., 1886	1886	1904
Royster, Hubert A., Raleigh, Univ. of Pa., 1894	1894	1895
Royster, W. I., Raleigh, (Hon.), Bellevue, N. Y., 1869	1869	1874
Shore, C. A., Raleigh, Johns Hopkins Univ., 1907	1909	1909
Small, V. R., Raleigh, Ohio State Univ. Med. Coll., 1916	1920	1921
Stancill, Wm. W., Raleigh, Univ. Coll. of Med., Va., 1906	1906	1914
Templeton, Jas. M., Cary, Balt. Med. Coll., 1882	1882	1893

Name and Address	*Licensed*	*Joined State Society*
Thompson, Hugh A., Raleigh, Univ. of Pa., 1914	1914	1917
Thompson, S. W., Wake Forest, Med. Coll. of Va., 1875		1904
Thompson, S. W., Jr., Wake Forest, Med. Coll. of Va., 1913	1913	1922
Watson, John B., Raleigh, Univ. of N. C., 1908	1908	1909
West, Louis N., Raleigh, Jeff. Med. Coll., 1912	1912	1915
Wilkerson, Chas. B., Raleigh, Univ. of N. C., 1906	1906	1908
Wilkerson, T. E., Jr., Raleigh, Univ. of Pa., 1914	1914	1916
Wright, J. B., Raleigh, Univ. Coll. of Med., 1899	1899	1900
Young, L. B., Wake Forest, Rt. 3, P. and S., Balt., 1886	1886	1906

WARREN COUNTY SOCIETY

President, T. J. Holt, Warrenton, Med. Coll. of Va., 1904	1904	1911
1904	1904	1911
Secretary, C. H. Peete, Warrenton, University of Pa., 1903	1906	1911
Macon, G. H., Warrenton, Univ. Coll. of Med., Va., 1910	1910	1911
Norton, N. D., Norlina, Univ. Coll. of Med., Va., 1909	1909	1912
Packard, F. S., Norlina, Bowdoin Med. Sch., Me., 1887	1907	1922
Perry, Mark P., Macon, (Hon.), P. and S., Balt., 1884	1884	1884
Rodgers, W. D., Jr., Warrenton, Jeff. Med. Coll., 1913	1913	1915

WASHINGTON-TYRELL COUNTY SOCIETY

President, William H. Hardison, Creswell, Wash. Univ. of Maryland, 1870	1871	1890
Secretary, William H. Ward, Plymouth, (Hon.), Univ. of Maryland, 1881	1886	1886
Bray, T. L., Plymouth, Univ. of Md., 1916	1916	1920
Halsey, Benj. F., Roper, Vanderbilt Univ., 1893	1894	1894
Hassell, Jas. L., Creswell, P. and S., Balt., 1886	1886	1904
McGowan, Claudius, Plymouth, Med. Coll. of Va., 1917	1917	1922
Mariner, N. B., Belhaven, Univ. Coll. of Med., Va., 1903	1903	1903
Speight, John W., Roper, Ky. Sch. of Med., 1885	1885	1904
Spruill, Jos. L., Sanatorium, (Columbia) Univ. of Md., 1895	1895	1907

WAYNE COUNTY SOCIETY

President, C. L. Lassiter, Fremont, Jeff. Med. Coll., 1915	1915	1918
Secretary, W. H. House, Goldsboro		1922
Benton, Geo. Ruffin, Fremont, Med. Coll. of Va., 1901	1901	1904
Bizzell, Thos. M., Goldsboro, Univ. of Md., 1908	1908	1916
Cobb, Wm. H., Jr., Goldsboro, Jeff. Med. Coll., 1889	1889	1890
Crawford, W. B., Goldsboro, Bellevue Hosp., 1886	1886	1904
Daniels, O. C., Goldsboro, Med. Coll. of Va., 1903	1903	1916
Ellington, A. J., Goldsboro, Columbia Univ., 1915	1915	1917
Faison, Wm. W., Goldsboro, (Hon.), Jeff. Med. Coll., 1878	1883	1883
Ginn, Theo. L., Goldsboro, Med. Coll. of Va., 1901	1901	1904
Hayes, L. O., Fremont, Univ. Coll., of Med., Va., 1897	1897	1904

Name and Address	*Licensed*	*Joined State Society*
Henderson, C. C., Mt. Olive, Univ. of Md., 1914	1914	1919
Irwin, Henderson, Goldsboro, Univ. of Md., 1912	1914	1916
Ivey, H. B., Goldsboro, Univ. Coll. of Med., Va., 1911	1911	1917
Jones, Clara E., Goldsboro, Woman's Med. Coll. of Pa., 1894	1894	1897
Miller, Robt. B., Goldsboro, Med. Coll. of Va., 1898	1900	1902
Moore, J. E., Mt. Olive		1918
Morris, Geo. B., Mt. Olive, Univ. of Md., 1910	1910	1912
Parker, S. F., Mt. Olive, Med. Coll. of Va., 1901	1918	1922
Patrick, J. E., Seven Springs, Univ. Coll. of Med., Va., 1900	1900	1917
Person, Edgar C., Pikeville, Med. Coll. of Va., 1904	1904	1908
Person, H. M., Goldsboro, N. C. Med. Coll., 1913	1913	1916
Smith, R. A., Goldsboro, (Hon.), Vanderbilt Univ., 1879	1882	1887
Smith, Wm. H., Goldsboro, Univ. of Pa., 1906	1907	1912
Spicer, John, Goldsboro, Bellevue Med., 1889	1890	1904
Spicer, Richard W., Goldsboro, N. C. Med. Coll., 1910; Pa., 1911	1910	1916
Spicer, William, Goldsboro, Bellevue Hosp., N. Y., 1898	1898	1904
Strosnider, Chas. F., Goldsboro, Univ. of Md., 1909	1910	1913
Sutton, Wm. G., Seven Springs, Jeff. Med. Coll., 1889	1889	1896
Whelpley, Frank L., Goldsboro, Wash. Univ., St. Louis, 1902	1918	1918
Whitted, W. P., Eureka, Univ. of Md., 1919		1921
Wilkins, J. W., Mt. Olive, Med. Coll. of Va., 1913	1913	1917
Woodard, A. G., Goldsboro, N. C. Med. Coll., 1907	1907	1909

WILKES COUNTY SOCIETY

President, C. S. Sink, North Wilkesboro, N. C. Med. Coll., 1912	1912	1913
Secretary, Julian E. Duncan, North Wilkesboro, Univ. Coll. of Med., Richmond, Va., 1907	1907	1908
Eller, Albert J., Readybranch, P. and S., Balt., 1893	1895	1898
Gilreath, Frank H., N. Wilkesboro, Univ. of Nashville, 1898	1898	1898
Hutchins, E. M., N. Wilkesboro, N. C. Med. Coll., 1896	1896	1904
Pegram, R. W. S., Canton, Balt. Med. Coll., 1892	1894	1907
Somers, L P., New Castle, Univ. of Md., 1897	1889	1904
Triplett, W. R., Purlear, N. C. Med. Coll., 1914	1915	1920
Turner, J. M., North Wilkesboro, Univ. of Louisville, 1881	1885	1896
White, Jno. W., Wilkesboro, (Hon.) Jeff. Med. Coll., 1889	1889	1890

WILSON COUNTY SOCIETY

President, R. H. Johnston, Wilson, Univ. of Maryland, 1894		1919
Secretary, Ed. C. McClees, Elm City, Med. Coll. of Va., 1917	1920	1920
Anderson, Wade H., Wilson, Univ. of Va., 1902	1904	1904
Barnes, Benj. F., Elm City, Univ. of Md., 1902	1902	1902
Bell, G. E., Wilson		1922
Best, Henry B., Wilson, Univ. of N. C., 1907	1907	1908
Brooks, G. M., Elm City, Jeff. Med. Coll., 1918	1919	1919
Dickinson, Elijah T., Wilson, Med. Coll. of Va., 1895	1895	1900

Name and Address	Licensed	Joined State Society
Eagles, Chas. S., Stantonsburg, Univ. of N. C., 1909	1909	1910
Grady, Leland V., Wilson, Rt. 2, N. C. Med. Coll., 1913	1913	1914
Hackney, Ben H., Lucama, Tulane Univ., 1911	1911	1913
Herring, Benj. S., Wilson, Univ. of Mich., 1900	1901	1901
Hoover, H. R., Black Creek, Balt. Med. Coll., 1891	1892	1904
Lane, P. P., Wilson, Univ. of Md., 1908	1908	1920
Lewis, Geo. W., Wilson, Univ. of Md., 1886	1885	1894
Mitchell, Geo. W., Wilson, Univ. Coll. of Med., Va., 1913	1913	1920
Moore, Chas. E. Wilson, (Hon.) Bellevue Med. Coll., 1875	1875	1875
Moore, Edwin G., Elm City (Hon.) Univ. of Md., 1883	1883	1890
Moore, K. C., Wilson, Univ. of Mich., 1909	1909	1910
Person, T. E., Stantonsburg, N. C. Med. Coll., 1911	1911	1914
Powell, H. H., Stantonsburg, N. C. Med. Coll., 1911	1911	1914
Putney, R. H., Elm City, Med. Coll. of Va., 1914	1914	1920
Saliba, Michael M., Wilson, Balt. Med. Coll., 1897	1910	1910
Smith, G. A., Back Creek, Louisville Med. Coll,, 1887	1893	1882
Smith, L. J., Wilson, Jeff. Med. Coll., 1912	1918	1918
Strickland, Ernest L., Wilson, Med. Coll. of Va., 1916	1916	1917
Williams, Alfred F., Wilson, Univ. of Md., 1901	1901	1904
Woodard, C. A., Wilson, Univ. of Va., 1904	1904	1920

YADKIN COUNTY SOCIETY

President,		
Secretary,		
Bryant, Charles G., Jonesville, Louisville Med. Coll., 1894	1902	1904
Couch, V. F., Yadkinville, Columbia Univ., 1910	1910	1919
Leak, Wharton G., East Bend, N. C. Med. Coll., 1900	1899	1904
Martin, Richard E., East Bend, Univ. of N. C., 1912	1912	1922

YANCEY COUNTY SOCIETY

President,		
Secretary,		
Peck, W. A., Ramseytown		1910

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TRANSACTIONS

OF THE

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

TWELFTH ANNUAL SESSION

WINSTON-SALEM, N. C.

MONDAY, APRIL 24th, 10 A. M.

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

TWELFTH ANNUAL SESSION

WINSTON-SALEM, MONDAY, APRIL 24, 10:00 A. M.

PROGRAM

9:45 A. M.—1:00 P. M.

1. Call to Order by the President.
2. Prayer—Dr. H. E. Rondthaler, Winston-Salem.
3. President's Annual Address—"A New Vision and an Ideal."
4. Report of Secretary—F. M. Register, M. D., Raleigh.
5. Report of Special Committees.
6. Appointment of
   (a) Committee on President's Address.
   (b) Committee on Visitors and New Members.
   (c) Auditing Committee.
   (d) Committee on Resolutions.
   (e) Other Committees.
7. Venereal Disease Clinic in a Near Rural County—J. A. Morris, M. D., Oxford. Discussion by R. S. McGeachy, M. D., Kinston.
8. How Can We Reach the People with the Vaccines?—L. L. Williams, M. D., Mt. Airy. Discussion by A. C. Bulla, M. D., Raleigh.
9. The Protection of City and Rural Water Supplies—J. H. Hamilton, M. D., Wilmington. Discussion by W. A. McPhaul, M. D., Charlotte.
10. North Carolina Answers "Present!"—Miss Katherine Myers, R. N., Raleigh.
11. A Description of Public Health Work in the Schools of Robeson County—E. R. Hardin, M. D., Lumberton. Discussion by C. N. Sisk, M. D., Winston-Salem.
12. Health Work in the Schools—R. L. Carlton, M. D., Winston-Salem. Discussion by W. M. Jones, M. D., Greensboro.

2:45 P. M.—5:00 P. M.

1. The Model Handling of the Tuberculosis Problem—P. P. McCain, M. D., Sanatorium. Discussion by T. G. Quickel, M. D., Gastonia.
2. Relationship of the Public Schools to the Health Department—Supt. S. B. Underwood, Raleigh.

3. Public Health and Public Welfare Correlated in County Work—Mr. S. E. Leonard, Wilson.

4. Milk Inspection from a Practical Viewpoint—Mr. J. H. Heald, Winston-Salem. Discussion by Mr. J. H. Epperson, Durham.

5. The Co-operation of the State and County Officials—B. A. Olds, M. D., Henderson. Discussion by P. J. Chester, M. D., Greenville.

6. The Relationship of the State Department to the County Departments—E. F. Long, M. D., Raleigh. Discussion by S. E. Buchanan, M. D., Concord.

7:45 P. M.—10.00 P. M.

1. Health Play—"The Health Champions," by a Group of Modern Health Crusaders.

2. Value Received for Money Spent in Public Health Work as Seen by a County Commissioner—W. W. Dawson, M. D., Grifton.

3. The General Practitioner and Public Health—W. F. Hargrove, M. D., Kinston.

4. Adoption of Resolutions.

5. Election of Officers.

6. Adjournment.

TRANSACTIONS

OF THE

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

TWELFTH ANNUAL SESSION

MONDAY, APRIL 24, 10 A. M.

The meeting was called to order by the President, Dr. L. J. Smith of Wilson.

Invocation by Dr. H. E. Rondthaler, Winston-Salem.

ANNUAL ADDRESS OF THE PRESIDENT

A NEED, A VISION, AN IDEAL

L. JACK SMITH, M. D., WILSON

The recognition of a need, a clear vision of the need and the formation of a consistent ideal are the fundamental principles of all worth-while achievements.

God created man and man soon felt a need of a help-meet. God had a vision of man's need and from His wonderful mind sprang an ideal to fulfill this need, which resulted in the creation of woman, the most beautiful of all God's creation.

God created the world and placed man in it to have dominion over the earth. For many thousands of years, we know not how long, man struggled through an uncertain existence, getting deeper and deeper into sin until the human race was lost in sin. The need for saving a lost world was realized. God had a vision of this need and again His omnipotent mind worked out a plan of salvation which resulted in the coming of the Christ to save a lost world.

Coincident with the progress of man, wealth began to accumulate in form of money which represented value. Man then began to feel the need of a safe repository for his money. Some frugal mind caught a clear vision of this need, which resulted in an ideal—the bank—that great institution which is not only a safe repository for our money, but furnishes a means of exchange indispensible in the financial world today.

For many years our educators endeavored to educate the people of the world by means of private tutors and private schools. This sys-

tem educated the few and neglected the masses and this neglect caused a realization of a need for a more universal system of education. Some far-sighted man caught a vision of this condition, and as this vision became clearer in his mind's eye, the public free school sprang up before him as an ideal and a possibility for the education of all the people.

During the progress of the recent world war and immediately after its cessation, the people of the whole world felt a great need of peace. It was Woodrow Wilson, that great "man of wisdom and an understanding heart," who first caught a true vision of the world's needs. From his heart and brain came the ideal of a closer brotherhood among people and nations. Although his ideals have seemingly failed, because of political prejudice, yet they still live in the hearts of the people, and if world peace is ever attained, which we hope and believe is not far distant, then his ideals will have been fulfilled.

In the year 1513, Ceron, a Spaniard, one of Balboa's party, undertook the discovery of a strait leading from the Pacific to the Atlantic, separating North and South America, and of course failed, but he did discover the need of such a passage and proposed a canal across the Isthmus of Panama. Over one hundred years later Hernando Cortez made a similar discovery and proposed to his king the construction of a canal, but owing to the death of Cortez this project failed. Again in 1873 Lieutenant Wyse organized a company for the construction of this canal, but before beginning work, a French corporation bought out the rights of the Wyse company, and this French company began work under the leadership of De Lesseps, who engineered the construction of the Suez Canal. After the loss of about 50,000 lives and nearly bankrupting France they failed because of bad management, sickness and a faulty vision of the task in hand. About this time the State of Panama seceded from Columbia. The United States then purchased from Panama what is known as the Canal Zone, a strip of land five miles wide on each side of the Canal, and also granted to this country the right to maintain order and enforce sanitary regulations in the cities of Colon and Panama. Characteristic of America and our president, Theodore Roosevelt, we rushed into the job, and in the words of Mr. Roosevelt, to "make the dirt fly," without a proper vision of the task before us—malaria and yellow fever still took their toll via death.

About this time our own beloved son of the South, Gen. William C. Gorgas, had about completed that seemingly impossible task of ridding Cuba of yellow fever. He was then appointed by the United States government to take charge of the sanitation of the Canal Zone, to make it habitable for the white man. It was he who caught a true vision of conditions as they existed in this most insanitary country on earth; it was he who through his clear vision set an ideal to be accomplished, this ideal being fulfilled in just sixteen months from the time he took charge of this work. In 1914, just 401 years from the time Ceron discovered the need of a short water course from the Pacific to Atlantic, the Panama canal was formally opened to world traffic, all of which was made possible by the vision of one man,

General Gorgas. Nor would we forget to give due credit to the scientific researches of such men as Dr. Carlos Finlay, Dr. Ross, Dr. Carter and Major Walter Reed and others who established beyond doubt the mosquito theory of the transmission of yellow fever and malaria. Is it any wonder that the great universities of the world vied with each other in conferring degrees on this great humanitarian; and is it any wonder that the governments of all the greatest nations bestowed upon him the highest official and social honors?

What could be a more fitting monument to the memory of so great a man than the proposed six million dollar "Gorgas Memorial Institute," to be erected in Panama to stand at the cross roads of the world as a beacon light of safety and health, throwing its rays to all lands burdened with disease?

While the history and progress of public health in North Carolina is not so spectacular, yet it deserves the highest commendation for its steady and unparallelled growth. To some present here today, the recitation of the events of Public Health in North Carolina, may be too fresh in their minds to be called history, but rather a record of current events.

The State of North Carolina owes a debt of gratitude to the late Dr. Thomas F. Wood, who caught the first vision of the possibilities of public health work in North Carolina and who kept alive his ideals until his death. It was through his influence and because of his vision that the North Carolina Medical Society in 1877, by act of the General Assembly, was made the First State Board of Health, acting through a committee elected by the society. The General Assembly's appropriation was the great sum of $100.00. It is not the purpose of this paper to recite in detail the events of public health development in North Carolina, but rather to mention the most outstanding events along with the names of the men who had vision and strength of character enough to bring about beneficial results.

For a period of twelve years, Dr. Wood was Secretary of the State Board of Health, and during that time valuable policies were inaugurated, laying the foundation for a more comprehensive health program. His efforts were principally confined to educational methods through publications and the enactment of public health laws. He succeeded in getting the State appropriation raised to $2000.00 per year.

In 1892 Dr. Wood died and Dr. Richard H. Lewis succeeded him as Secretary. Dr. Lewis, who had been actively interested in the health work of the State, continued the policies and widened the scope of activities of his predecessor. During his administration the State Laboratory of Hygiene and the State Tuberculosis Sanatorium were founded. The Annual State appropriation at the end of Dr. Lewis' administration in 1909, had reached the magnificent sum of $10,500.00. This period closed thirty-two years of public health work in North Carolina.

On July 1st, 1909, the present Secretary, Dr. W. S. Rankin, took charge and in thirteen years has placed North Carolina on the map

in all matters of public health. In addition to being a man of true vision and ideals, he has those qualifications known as will power, determination, gray matter and untiring effort.

In paying this tribute to Dr. Rankin, we would not for one moment disparage the efforts and accomplishments of his predecessors who laid the foundation for health work in North Carolina. Public Health work is primarily educational and any educational process is slow at best. Nor would we forget the generosity of the appropriating bodies who have made it financially possible to carry on this great work; nor the Health Officers and Nurses who have largely accomplished the end results, intimately touching the lives of the masses, taking to their homes the great message of health. Nor would we forget the directors of the different Bureaus and their personnel who have contributed largely to the end results. What are the end results? If time permitted we should be delighted to recount them, but it is sufficient to say, with justifiable pride, that public health methods in the Old North State are pointed out as a model for other States to follow.

After several years of spasmodic and unorganized efforts by the Health Officers of the State, we recognized the need of closer co-operation, interchange of thought and experience. In 1910, in a meeting at Charlotte, the North Carolina Health Officers Association had its beginning and through the vision and untiring efforts of such men as Dr. George M. Cooper, this association has outgrown its name until today we are meeting under a new and more comprehensive name—"The North Carolina Public Health Association." The reason for this change is made clear by observing the names appearing on our program today, not only health officers but men of other vocations who have become interested in our work.

Many cities in many States have highly organized an efficient health work, but only one other State, Wisconsin, claims to be superior or equal to our own State in rural health work. Are we satisfied to stop where we are and revel in the sweet plaudits of our friends? I think not, if I am any judge of the signs of the times. In reality we have not reached the first quarter in the mile race set before us. There are still recognized needs, and there are still men who are catching a true vision of these needs and setting ideals to make North Carolina a better and safer place in which to live.

We, who are concerned principally in the execution of the details of preventive medicine, often lose sight of the whole and become lost in details. If we would occasionally pause for a moment in our mad rush in the pursuit of details and get a clear vision of the real task before us, I am sure our work would be more effective and directed to the point of greatest need in our respective communities.

What are some Public Health needs in North Carolina today?

It is an old truism that "you cannot teach an old dog new tricks." Herein lies a fundamental principle, which must be applied in our methods of teaching hygiene and sanitation. Therefore, in the schools of North Carolina we must direct our greatest efforts. In order to make this a physical possibility on the part of our limited personnel,

North Carolina must consolidate her schools, thereby making it possible for the health officer and his nurses to make more frequent visits to the schools. Under present conditions in many counties, it is necessary for the health officer to visit any where from fifty to one hundred "little red school houses" in order to carry a message of health to the children of his county and this can be done only once a year if the health officer is unusually energetic. Under the proposed system of consolidation, it would be possible for the health officer to visit each consolidated school once a month. I am glad to say that my own county (Wilson) is making rapid strides toward consolidated schools, only one township out of ten failing to vote for the necessary bond issue. I pause here to say that a man of vision is back of this movement.

It is a well known fact that the possibilities of preventive medicine are far greater than curative medicine.

A prominent physician and Rotarian on one occasion introduced the health officer of his county to the Rotary Club in the following manner: "This is our Health Officer who is trying to keep our 37,000 citizens in good health, while about thirty of us are trying to patch those who get sick. I opposed the organization of the Health Department in this county on the grounds that no one man could do effective health work, and personally I think the order should be reversed—one to patch and thirty to prevent sickness." These remarks give us food for serious thought. To my mind it means this, that we must have more and better trained help in our Health Departments, or else every general practitioner must practice preventive medicine more extensively if we expect to spread the gospel of good health and its benefits to all the people.

Science and experience have taught us some very definite facts in the matter of diseases and their prevention, but what percentage of our people are taking advantage of these facts, and whose fault is it that more do not protect themselves against diseases? The answer to this question leads us back to that fundamental statement previously made, that public health work is fundamentally educational. We will find the answer in a better system of public health education. Just how this will be worked out depends on the acuteness of vision of public health officials of State and county. We must study the needs and environment of our individual communities in order to make a correct diagnosis and apply the proper remedy.

We not only need to do the constructive things in public health, such as vaccination, sanitation and teaching hygiene, but we need to put down the destructive forces which are leading our people into the wrong road. I refer especially to quack nostrums and to quacks who call themselves doctors.. Why is it so many of our people are trying to follow the teachings of so many new isms? Is it because the medical profession is not meeting the needs of the people? Evidently the people must feel a need of something more than we are giving them. The pitiful part of the whole situation is that so many who try to follow the new isms and ologies in medicine and religion, fall by the

wayside and become disbelievers in any and all things. This very thing is responsible in a large measure for the spirit of unrest which is permeating and destroying our social, economic and religious life. This Association, collectively and individually, holds a peculiar strategic position between the laity and the medical profession. Therefore, it is our duty, as well as a privilege, to do all in our power to put down these destructive forces which are undermining the very thing we are trying to build—good health for every one. Let us hope that we are only passing through a period of extremes usually incident to the passing of the old order of things to more permanent and rational new conditions.

Human progress is based on a knowledge of the past, a realization of the present and a true vision of the future. From these facts, ideals are born, ever stimulating us to go forward. In the light of the past and present development of public health in North Carolina, may we not set as our ideals for the future that every baby born in North Carolina shall have its rightful heritage of sound mind and body; that every school child shall be taught the fundamental principles of health, and have corrected every defect interfering with his progress; that every college student shall be taught the fundamental principles of community health; that every adult will learn the value and necessity of a thorough periodic medical examination. May we not expect that every home, school and place of industry will be made safe and sanitary, and that every person shall be protected against smallpox, typhoid fever and diphtheria by vaccination.

Now that we are beginning to grasp the truth concerning venereal diseases, may we not expect the eradication of these so-called social diseases, syphilis and gonorrhea.

The great white plague, tuberculosis, does not yield its strong hold upon the human family as readily as some of the more acute diseases, and yet progress in fighting this disease has been, and is still gratifying, and more than worth while. Why then, should we not at least expect the limitation of its spread, if not its cure?

As General Gorgas made it possible for America to construct the Panama Canal, so we as guardians of the health of our people, can and should make it possible for North Carolina to go forward, making a happier and more prosperous people. But if we would do this, we must recognize the needs of our State, get a true vision of those needs and set consistent ideals to be achieved.

The Secretary's report was adopted.

Dr. A. C. Bulla, Vice-President, appointed as a Committee on the President's Address Dr. C. W. Armstrong, Dr. W. A. McPhaul, and Dr. R. L. Carlton.

Committee on Visitors and New Members: Dr. R. L. Carlton, Dr. A. C. Bulla, and Dr. J. H. Hamilton.

Committee on Resolutions: Dr. K. E. Miller, Dr. N. B. Adams, Dr. P. P. McCain.

VENEREAL DISEASE CLINIC IN A NEAR RURAL COUNTY

J. A. Morris, M. D., Oxford
Health Officer, Granville County

No attempt will be made to present to you the scientific aspect of clinics in Granville County. The whole population is less than the population of a number of the cities of the State: but consider again with me some facts already found and known, and also other facts based on those previously known, together with real needs arising out of this knowledge applied to conditions believed not to be peculiar to Granville County, but to be common in North Carolina.

The county in question has in round numbers 27,000 inhabitants, 86% of these live out in the open country. It has been assumed that a rural population is freer from venereal diseases than town and city populations. This was true when rural contacts were few.

The world war increased money circulation. With money came leisure; and with money and leisure came a great increase of contacts. These contacts have become more promiscuous. The country-man has ventured to enter the elysian fields of venery, thought to be peculiar to the city. He has returned to the country infected and sophisticated. He is citified and begins to convert the country. In short, he is a man with a man's appetite, in no point different from the city fellow, except in former times he had been minus that one's opportunities. He now makes his own opportunities. The automobile helps him much. It makes his contacts almost as promiscuous and innumerable as the city man's. Indeed, the automobile has become the very vestibule of the temple of Venus. The red light district, pushed by the police, has transferred to the automobile. Thus Granville County is unfortunately too nearly keeping step with other equal areas more densely populated. Increments of venereal diseases are added fast. The startling figures revealed by the scrutiny of war into the man power of the country will not seem so imaginary after one has turned on the light of close investigation of conditions that before time seemed not to be.

Syphilis and gonorrhea are both with us; but for lack of an office sufficiently private I have been unable to treat gonorrhea. I have been importuned by many to treat them for gonorrhea because of insufficient former treatment. I am ready to believe that its incidence is greater in Granville County than syphilis. Rosenau assigns it an importance equal to, if not greater than syphilis. Ricord is quoted as saying, "Syphilis has slain its thousands, but gonorrhea its ten thousands." Dr. Mitchener of the Bureau of Venereal Diseases says, "Gonorrhea fills the back yards with trash, but syphilis fills the grave yards." The writer has seen wretched miserable suffering of both men and women having gonorrhea, but does not remember a single death from it. On the other hand he has failed to see relatively as painful suffering on the part of syphilities as of those suffering from

gonorrhea; but he has seen deaths from syphilis. It is the arch structural and functional degrader of tissues.

It is assumed that other rural areas are infected as badly as Granville County. Since syphilis spreads both by contact and by so-called heredity it deserves special notice by quarantine officers and health officers. It is to the social structure as hateful as is the wild onion to the farmer. The onion multiplies by seeding in the tops, and by division in the roots or bulbs. Syphilis multiplies both in made life and in life in the making.

The work of surveying venereal disease conditions is more difficult than that of other communicable diseases. There is syphilis where none shows by symptoms. Surgeons are now heard to say they deem it more necessary to apply a Wasserman test than one for albumen, casts, and other signs of nephritis. Hospitals are testing most or all of those admitted, and reveal syphilis clinically symptomless. It might be argued that such syphilis as is symptomless must be less serious than it is usually rated. On the other hand it may be as in other communicable diseases that its clinical severity is not a measure of its communicability; and that from a public health point of view its very sneakiness constitutes this class a snake in the grass, unrecognized, and so the more dangerous to the public. If the physicians of Granville County recognize syphilis, they report very little of it. In 1921 there were only 60 cases reported from the county. From May of 1921 up to about December 31st there were treated in the Health Department's clinics 51 cases.

In an effort to ascertain the sentiment of the physicians of the county relative to the Health Department treating syphilis, it developed that only two of the fourteen physicians of the county desired to treat syphilis. The others preferred not to treat any venereal disease. This attitude on the part of the profession toward these despised diseases insures its more or less unhindered spread. The argument then is that the serious public looks to quarantine officers and health officers to take up the survey and do the work of fighting these evils while infectious as other communicable diseases. The close scrutiny of man-power by war needs has opened the eyes of the public to some extent, and the partial knowledge has created fear. The U. S. P. H. Service sent a moving picture film into the county, and started a discussion of the matter among the infected and non-infected that made it easier to find that these diseases were stalking in the open before our eyes, but sufficiently hidden by clothing to escape notice. When the clinics began to uncover some of these, it came to the notice of the commissioners of the county that the unusual coming to the office on a given day of the week was an effort against syphilis. They expressed great satisfaction that the work was being done, and this, doubtless, was the chief persuasive force exerted upon them to provide again out of the county's depleted treasury the part of the budget they had hitherto helped to make up. They, doubtless, had talked to their constituents, and became exponents of public sentiment when they made provision for the continuance of the work.

The clinics are furnished out of the working people of the county. Among the prisoners of the county a large percentage have been found infected with venereal diseases. These cases call me to the camps in 70% of my visits to these places. While it may not be legitimate to compare this class of persons with those out of prison, and draw direct conclusions on analogy not proved, yet from personal knowledge of many of the prisoners it is known that while they had their liberty they were to the public, and, even to the physicians, symptomless. This very fact marks the effect these diseases have on productive labor of all kinds. A man with even a mild case of venereal disease is no more a man until he is cured of it. He is, as it were, a boy. Put him under the strain and the strain plus his disease show the symptoms. They often drop out and reduce the output of the industry.

Then industry joins its voice of demand with the social insistence that everywhere somebody be held responsible for checking the spread of these cripplers of industry.

The inability to work enough to earn a living on the part of a young white man who applied to the County Welfare Officer for help to obtain the very necessities of life, was the occasion of the beginning of the clinics in the county. He had been given in another county the standard mixed treatment for syphilis, costing him $150.00, but it did not avail. Neoarsphenamine, then intra muscular mercury, and finally potassium iodide have made that poor fellow laugh again and exclaim, "I never felt so good before in all my life!" Recently a rural mother of three sons sent the writer a confidential message that she had heard that a certain other rural woman had syphilis, and that she was reputed to have given it to six young men; that she wished I would go and find out the truth and protect her sons, if that woman did have the disease. I went. I found clinical evidence which might have eluded notice of one not on special hunt for it. The laboratory findings were four plus (4+). Now this was away back in the sticks, indicating that it needs only a search to find these evils coextensive with the passions of persons.

A working knowledge of syphilis plus an acquaintance with the technique of intra-venous medication is all necessary to treatment of syphilis. Granville County's whole outfit, not considering small things to be found in any health office consists of a glass pharmacist's graduate, with glass rod for stirring the neoarsphenamine in about 40 c.c. of freshly distilled water, a graduate container tube with collar for hanging at an elevation sufficient for gravity to force the fluid through a rubber tube attached to the lower end of the graduate tube and provided with a cut-off near lower end of the rubber tube and having a metal tip for a slip-on Luer needle, a copper still of about ½ gallon capacity, two kerosene or alcohol stoves to run the still and sterilize towels and instruments.

About 3 ounces of distilled water are provided for each patient expected. The size of needle used is about 18 to 20 gauge. The elevation of the container to be governed somewhat by the gauge of the

needle. I have had no reaction worth mentioning except in two susceptibles who experienced slight nausea while administering the solution.

Every quarantine officer in counties not having clinics might, by an understanding with physicians, establish a venereal disease clinic which might pay him as well as any work he would likely have according to the present piece work plan of values assigned the work in it. The work in Granville has been helped in this cooperative plan but just begun.

Since in almost any county the venereal disease cases equal if not exceed the cases of all other communicable diseases and since gonorrhœa produces so much misery, entailing thereby expense of treatment at the hands of physicians, surgeons, nurses and hospitals, and since it reduces production in any industry where it is engaged, thereby increasing the cost of products consumed by the public, why should not there be in even every rural county some one responsible for seeing that it is reduced to a minimum as are other communicable diseases?

Syphilis in country districts stalks unsuspected before the eyes of physicians because it rarely gives pain outweighing the wish for secrecy in the heart of the patient, and yet with all its sneaking silence it brings social and national degeneracy. Unrecognized syphilis marrying unrecognized syphilis may be a new application of the idea of consanguinity in marriage with its train of evils. The adding of degeneracy to degeneracy in this way would make a good working hypothesis in the study of eugenics. The State eugenic statute would be more than seconded by every quarantine officer and health officer faithfully doing his bit for the future state. The significance of this statement is illustrated by this incident: A certain young negro in the county, popular with young negro women was accused by one of these having a plain case of syphilis of being the man to infect her. At the same time this luetic witness testified that this popular young fellow was giving his attention to another young girl. Both the man and the girl were found infected and were compelled to take treatment. They had each taken but two doses of neoarsphenamine when they slipped off to a neighboring county seat, got a certificate of freedom from syphilis with license and married. The examining physician did not know, and they passed all right, defeating the ends of the statute.

Shall quarantine officers and health officers anywhere be too much occupied with other interests to save our civilization from this insiduous rot that can make our nation hobble with tabes dorsalis as truly as an individual? Let us charge ourselves with the apparent responsibility.

DISCUSSION

Dr. R. S. McGeachy, Kinston: Three months ago we established in Kinston a venereal clinic. We went to work, and at first moved along very smoothly. We got along very well indeed.

I want to show first a few of the needs of a venereal clinic. This past week we gave 83 doses of neo-salvarsan, made 12 Wassermanns,

and missed two cases in which we could not find veins to give the arsphenamin. That will make a total of 97 whom we treated, and I could guarantee that not ten of them would have taken a single dose of medicine otherwise. Up to today we have taken around 350 specimens for Wassermanns, and we found positives in about 130. Out of the 130, I will guarantee that not twenty per cent, had any idea that they had anything the matter with them. They had no idea they were infected. One week we took 27 Wassermanns and got 19 positive reactions. That was a high per cent. One week we took twenty Wassermanns and got nine positive reactions. Out of the nine there were eight young colored women employed as cooks and nurses in the families of our town with four plus positive Wassermann reaction. Last week we had a beautiful little white girl, nine years old, brought to the clinic, and the mother said that she wanted a blood test. I do not know whether she knew what she was after, or what she had in mind, but we made the blood test, and there was a four plus Wassermann reaction in this little nine year old white girl. A few weeks ago one of the physicians in Kinston sent a boy eleven years old, a clean, neat, well dressed little white boy, and he had a four plus reaction. I will guarantee that out of our county population of about 29,500, between twenty and twenty-five per cent have syphilis. That is our status just on the subject of syphilis. We have not, as Dr. Morris says, touched gonorrhea. We are planning for it, and will start it within a few days. Up to date we have had several applicants for treatment, but have had to turn them down.

The greatest trouble we have experienced is in holding the people down. They come in and take a blood test and find it negative. They come back and say, "So and so has it, and I think I would better take the treatment." A man came in recently, about eighteen miles, begging me to treat him. The week before I had found that reactions in both himself and his wife were negative. I believe today that man is a little disappointed because we would not treat him.

Dr. L. B. McBrayer, Sanatorium: There is one point in that paper which was brought out so clearly that it does not need discussion, but I think it ought to be emphasized. The first point which the essayist made was that in his county the folks were not being treated for venereal diseases. The next question that came into my mind was this: are the people entitled to be treated for venereal diseases, or should the medical profession in North Carolina allow them to go on increasing the infection until it becomes universal? That is a question which the medical profession of North Carolina owe to themselves and to the people to decide. In Granville County the medical profession decided that the patients should be treated. Second, they decided that the men who are practicing medicine do not want to treat them. Third, they decided that they wanted the Health Officer to establish a clinic and treat them. I want to say that that is doing business, and if the medical profession will assume that attitude we shall, first, perform our duty to the people of our State; second, we shall raise ourselves in the estimation of the people of the

State and have their confidence; and, third, we shall lead them in public health matters, as we ought to do. If we do not lead, some one else will.

Dr. A. J. Ellington, Goldsboro: I am the Health Officer of Wayne County. We have had a clinic since January sixth, and have taken about 487 Wassermanns. Taking the one, two, three and four pluses together, we have had 135 positives, or about 29%. The three and four pluses run about 23 per cent. I add that because we know that one and two plus reactions are considered doubtful. During the campaign we have had on, it has been my duty to examine food handlers, of whom there were about 75. Out of that number, about twelve had positive reactions. Quite a number in the clinic were servants working in the homes of the prominent families, kissing the children of some of the best people in town. Some had four plus reactions. That there is real need for this work, at least in some communities of the State, cannot be doubted.

My last point is one that will worry every health officer who takes on this work, and that is how to get them to continue treatment. The first plan we followed was to make the thing self-supporting, to get the Bureau of Epidemiology to furnish free neo-salvarsan and we provide means to give it by getting every patient to pay $2.00 for every dose. That has failed, because I have about 75 or 100 who were supposed to come in for treatment the last two weeks, and I have had only about 25. Then we arranged to have the county pay $1.00 on each dose and to have the salvarsan given to the patient for $1.00. I do not know how far that will go toward solving the problem, but a few more have come in. The third method I have in mind is the financing of the whole thing by the Health Department, letting the Health Officer give the medicine, or else provide funds out of his budget to pay the doctor enough to justify him in taking his time to give it.

After all, this delinquency problem may be more of an educational than of a financial problem. The solution may lie in the gradual enlightenment of the people to the ultimate results of untreated syphilis, until we have a law which will enforce treatment.

Dr. W. A. McPhaul, Charlotte: It seems to me that this question of venereal disease is one of the most important and serious problems that confront the medical profession today, not excepting tuberculosis. Dr. McGeachy gave 83 Wassermanns in a week over in Kinston, and we have given as many as 92 in one day in Charlotte. In 1921 we gave over 15,000 treatments for venereal disease in Charlotte in the Health Department, and of course you all know that there are men there, at least a dozen, who do nothing else but treat venereal disease. Dr. Morris says that the problem in the rural sections is largely brought about by the automobiles. What are we going to do about it? It seems to me that we have to wage an educational campaign, especially among the colored people. There are three classes of colored people that have venereal diseases: those who have it, those who

have had it, and those who are going to have it. Last year, in the city of Charlotte, we examined over 400 handlers of food, cooks and waiters in the different hotels and cafes, and we found a four plus Wassermann in 29 per cent of the 400 examined. I tell you, gentlemen, it is a serious problem. It is a problem that the people do not know about—I mean the laity at large. In Charlotte we have been waging a campaign, trying to get people to send their servants down to have them examined. But when they do send them down for examination, the servants lose the jobs, so consequently they will not send them. What are we to do about it? I say that it is a question of education, and that we have to start in the schools. The right way I do not know, but we must start in the schools, explaining venereal diseases and their evil consequences.

Dr. Morris said that he had never seen a death from gonorrhea. I do not know that I ever have, but, I tell you, the end results are appalling, and many a grave in North Carolina is filled today from the end effects of gonorrhea.

It is a serious problem that faces North Carolina today, and I was glad to hear that paper.

Dr. J. S. Mitchener, Chief, Bureau of Epidemiology, State Board of Health: I want to say just a word about the work we have done, which began last November. It has been taken into about fifteen counties, and in all of these, possibly with the exception of two counties in which we asked the county health officers to represent us in taking it up with the physicians, a representative from Raleigh has gone in to discuss it with the doctors. We have yet the first county to refuse. I was encouraged by the reports coming in from Dr. Hollingsworth and Dr. Morris. It looked to me as though we could do what they could do. So I decided to try.

We have made examinations on nearly 2,000 people, and have found, as a whole, between 20 and 25 per cent positive. That shows, first, that there is a need for the work. Inasmuch as so many treatments have been given, we have proved that we can do it, so it is up to us to go to work. I have heard some men say that syphilis is not a public health problem after it is rendered non-infectious. Well, here is a thought for us: In North Carolina we have almost reached the lower limit of the death rate. Formerly we asked, what is the death rate in a county; now we ask, what is the length of life in a county. Knowing that syphilis does affect length of life, the old line life insurance companies are no longer giving life insurance to men with a history of syphilis, except in short term endowment policies. It seems to me that, inasmuch as these people who have had syphilis are handing down congenital syphilis, and will go down with neuro-syphilis, it is up to us to continue treating those people who can not pay the fees for private treatment. If it can be handled as it has been in Lenoir, all right. If not, it is a good thing for the health officers to do it themselves, and, as Dr. Morris said, it will often mean the continuance of the appropriation.

PROTECTION OF INDIVIDUAL AND MUNICIPAL WATER SUPPLIES

J. H. Hamilton, M. D., Wilmington

In the not distant history of medical philosophy nearly every conclusion was based upon a tripod of facts or symptoms. If we may for a moment adopt this system of reasoning, we may say that public health is based upon the tripod of water supply, milk supply, and excrement disposal.

While the problem of water supplies is primarily in the field of sanitary engineering, there are many communities where the health officer must of necessity act as sanitary engineer. In every community the health officer is consulted on nearly every health problem.

Private water supplies are generally taken from wells, springs, or cisterns. Wells may be roughly divided into two classes depending upon whether they pass through an impenetrable stratum. For the sake of convenience, we will consider that a well which does not pass through an impenetrable stratum to be a shallow well, and one which does pass through, a deep well.

Shallow wells may furnish unsafe water because the ground water above the impenetrable stratum is polluted. This may be due to the location of a privy, the cess pool, the barn yard, or pig pen. Or it may be the condition prevailing in the community. Shallow wells should always be placed under suspicion until repeated bacteria examinations have justified a faith in the natural purity of the water. Given this, we may safeguard the water by locating the privy or other sources of pollution at least a hundred feet away from the well and with a slope of the ground such that the surface water will flow away from the well, and by having a proper curb which will prevent polluting material being deposited on the surface of the ground immediately around the well, and by having a water-tight platform which will prevent contaminating material from being dropped directly into the well.

In deep wells, we generally have a water freer from pollution than in shallow wells. It is only in limestone regions that we need ordinarily to be suspicious of deep well water. Provided, of course, that our so-called impenetrable stratum is actually impervious. In deep wells we must be certain that our casing is tight, that we have proper curb, and a tight platform.

Springs are essentially shallow wells.

Cisterns must be free from leaks. The roofs from which the water drains must be washed clean before the water is diverted into the cistern. The reason why so many people have the impression that water from melting snow will grow worms is that the roof on which the snow rests is dirty and cannot be washed clean by melting snow. Clean rain water needs no filter. Most filters for cisterns are nuisances because they encourage people to divert dirty water into the filter.

These filters soon become foul. Cisterns should have platforms sufficiently tight to prevent the entrance of contaminating material, and the accessibility of the water to mosquitoes.

The only way the health officer can pass on the sanitary quality of an individual water supply is by making or causing to be made a careful sanitary survey of the source of supply and by bacterial examination of the water. In making the sanitary survey, particular attention should be made to the type of the supply, the condition of the platform and the curb, the slope of the ground, the distance of the privy, cess pool, barnyard, hog pen, or other source of pollution. In taking samples for bacterial examination, it is well to remember that only those bottles should be used which have been cleaned, sterilized, and distributed by the laboratory which is to make the examination. The report from the laboratory and its interpretation should be reconciled with the facts of the sanitary survey before pronouncing the source of supply as safe or unsafe. Unsafe supplies which cannot be made safe by correcting the defects revealed by the sanitary survey should be condemned. A good way to warn the public of the unsafeness of an individual supply is to paint a circle around the well or cistern, using red paint, and to post a notice stating that the supply is condemned as unsafe for human consumption. Those who cannot read the notice will observe the red paint and inquire about it.

Municipal supplies may be taken from wells in which case the health problem is essentially the same as in individual supplies. However, most municipal supplies are taken from rivers, lakes, or impounding reservoirs. These supplies may be divided into two general classes. Those which do or do not need a purification plant to improve the appearance or physical condition of the water. As a rule, all flowing streams need a purification plant. For these, the location of the intake is of great importance. One of the first concerns of any person interested in a municipal supply is the abundancy of the water supply.

The health worker, be he sanitary engineer or health officer, is interested in the sanitary quality of the water and the nature of the supply from the æsthetic point of view. The municipal supply should be, and generally is, the safest supply in the city. It is nearly always the only supply which can be closely supervised. Frequently it is the community's best safeguard against an epidemic of typhoid, dysentery, or cholera. What does it profit a city if its water supply is absolutely safe if it comes from a source which so offends the æsthetic sense of the people that they will not use it?

Practically everything concerning the type of the purification plant, its design, etc., belongs entirely to the field of the sanitary or hydraulic engineer.

The Health Officer is vitally interested in the efficient and scientific operation of the plant. It is not only his right, but his duty to demand that the plant be in charge of some one who can operate it intelligently and who can make the examinations necessary in order to know that the water which leaves the plant is safe and if not safe why not. These examinations should be made at least once each day and as often each day as is necessary.

Every municipal plant either with or without a purification plant should have an emergency chlorinating machine which can disinfect the water whenever it is desirable to do so.

Cities which are so located that it is unnecessary to have a purification plant generally depend upon wells, lakes, or impounding reservoirs. Where lakes or impounding reservoirs are used it is necessary to devote much time and money in painstaking inspection of the watershed. They must have the personnel and the laws or regulations with which to protect the watershed from pollution. Publicity alone cannot guarantee a safe water.

Too many of us have a false sense of security if the water which leaves the plant is safe. We overlook the possibility that polluted water may enter the city mains through their cross connections with reserved supplies which many industries have for fire protection. A considerable number of epidemics of typhoid fever have been caused in this way. Fire insurance companies like for the industries to be protected by an unlimited reserve. This generally means an untreated water from the nearest stream, a water nearly always highly polluted. The fire insurance companies also like to have this reserve supply connected with the city supply and separated from the safe water only by check valves. These check valves are mechanical devices and like all mechanical devices cannot be depended upon absolutely. The only safe attitude for the health officer is that there be no physical connection between the city supply and the reserve supply.

In conclusion let us state again that the technical details of water supply belong to the field of sanitary engineering. In this State we have in the State Board of Health a Bureau of Engineering upon which we can depend for free advice and counsel in all matters relating to our water supply. Cities should have water supplies which are not only safe but against which there is no aesthetic objection. Given a satisfactory supply, it is the duty of the health officer to urge the people to use the city supply in preference to individual supplies. The city's supply can have careful supervision. The individual supplies cannot. A safe water supply depends almost entirely upon alert and intelligent supervision.

DISCUSSION

Dr. Smith, President: This paper, it seems to me, deserves thoughtful consideration. Personally, I think the rural water supply of North Carolina needs a great deal of attention. Those of us who send samples to the State Laboratory of Hygiene know that open wells are one hundred per cent polluted.

Dr. W. A. McPhaul, Charlotte: I enjoyed Dr. Hamilton's paper very much, and, as stated by the President, I think that this problem has been neglected in North Carolina. I have never seen a sample taken from an open well that was not contaminated. We must do some work in the rural sections of the State. The people want to know how to improve their water supplies. We have numbers of

samples brought into our office, and, as stated, I have never seen one from an open well that was not contaminated. This applies not only to the open well, but also to the pump. Some time ago a man brought in a sample from a well 600 feet deep, that supplied a cotton mill. We found colon bacillus in 1 cc. He wanted to know what to do. I did not know what to tell him to do, except to chlorinate the well. We drilled a hole in the pipe and put in the chlorine until the water became sterile, but as soon as there was another heavy rain the well was polluted again.

It seems to me that the only thing to do is to carry on an educational campaign in the rural sections of the State, sending literature to the householders, or making personal visits. We shall have to show them where to locate the well, how to make the curbing around the pump, how to use the chloride of lime after each heavy rain—because in every instance that has come under my observation after a heavy rain the open wells and usually pumps become contaminated.

Dr. Wm. M. Jones, Greensboro: I agree thoroughly with Dr. McPhaul about the open wells.

So far as my experience goes, I have found the deep well all right. I have had any number of samples tested, and I find deep wells, with pumps, all right. With us the average open well is only about 22 feet, and they are all polluted—that is, all that I have examined. I quit long ago sending samples to Raleigh for examination, and just condemn them offhand. If not in all, at least eight out of ten you will find colon bacilli in 1 cc. In the majority I think the bacillus goes down from the top in the handling of the bucket and chain by the individuals making use of the well, and by the lack of curbing, allowing chickens, dogs, etc., to come about the well and the refuse to drain right back into it. I believe that there should be a pump or some other apparatus which will draw water out of the well without the handling of anything going back into the well, and then have good curbing.

Dr. K. E. Miller, Chief, Bureau of County Health Work, State Board of Health: There is no question that the water supply, private and public, has been very seriously neglected by our system of public health work. You will recall that in the schedule of values developed by health officers last year an item for the improvement of water supplies was not even included. That defect was, of course, realized when the schedule was revised, so that now there is an item in it for the improvement of private water supplies. Even at that, there has been deplorably little done in that direction. As I recall it, the reports for the last quarter (beginning January first) showed, I think, 48 private water supplies protected against surface pollution, of which number about 45 were in one county. So there has been practically nothing done throughout the State, so far as the co-operating counties are concerned, towards the improvement of the individual water supplies. At least very little has been reported, though no doubt more has been done than was reported. So this very important sanitary feature has been neglected.

In regard to the examination of water supplies, it has already been brought out that the open surface well is condemned already, so that it is a waste of time to send in samples from an open surface well. It is worse than that, because occasionally you will get samples that show nothing in the way of pollution, and whenever you get a result of that kind the owner gets the idea that his well is all right, because it shows nothing. The point is that it shows nothing at that particular moment, but that result does not indicate anything whatever as to the safety of the well, because it is a potential danger at all times, whether it is a specific danger or not.

With regard to municipal water supplies, I think also that the health officers of North Carolina have been very backward in familiarizing themselves with that problem. It is a problem primarily, as stated by Dr. Hamilton, of the hydraulic engineer, and it is that very thing that has made us shy off from it. The county health officer is likely to say: "That is something I do not understand, and I shall not bother with it." Now, we should understand these things, at least the fundamental principles, and if we do not understand them we should make it our business to find out the working principles of our local water plant, what kind of filters are used, what kind of treatment, how efficiently it is working. We should not only know the result of the bacterial examination, which is done once a month and which, of course, is hopelessly inadequate on that account, but we should know something about the general working plan of water purification. It is essential that we learn something about these principles, and if we do not understand them, we have, as Dr. Hamilton pointed out in his paper, a Bureau of Engineering at the State Board of Health, with specialists in that line of work who will be only too glad to come and go over the situation with you and explain in detail the general principles of water purification.

Dr. W. S. Rankin, Secretary, State Board of Health: I did not intend to get in on this discussion, but I can not resist the temptation to call attention to the fact that the pollution of water supplies and the ubiquitous distribution of the colon bacillus are not one and the same thing. It is all right to see that the well is properly located with respect to pigpen and privies, that it has proper curbing, etc. With all that I agree. But I want to remind you, Mr. President, as you are sitting here today presiding over the Public Health Association of North Carolina, with the principal representatives of that profession here, that you and every one of you here, including the nurses, have colon bacilli on your hands at this time. In dealing with water supplies we want to make a distinction between pure water supplies and pure wells and between the ubiquitous distribution of colon bacillus.

Mr. H. E. Miller, Chief, Bureau of Engineering, State Board of Health: Dr. Hamilton mentioned sterilization at such periods as the water supply may be unsafe. That may be practicable when the water supply has the kind of control the Wilmington water supply has,

that is, daily analyses, but as a general thing with water supplies, and particularly deep wells, when a deep well, mechanically operated, shows the presence of B. Coli once or several times, in sufficient quantities, that well is certainly unsafe. It should be sterilized as a temporary measure, until the source of infection can be located and remedied, or else the well should be abandoned.

Sterilization of a city water supply should unquestionably be practiced at all times, because the character of the water is no better than the efficiency of the operation of the plant. We are not assured that the plant will operate one hundred per cent efficiently at all times, and we can not very well anticipate the times when it will not operate one hundred per cent efficiently, so therefore it should be sterilized at all times. Sterilization should not be looked upon as a treatment process, for it is essentially a secondary process of treatment. The sterilization of water is a precautionary measure, and when applied after filtration, becomes a valuable item of public health insurance.

I think that the point perhaps most vital in water supply protection has been emphasized, and that is the sanitary survey. We have been inclined to rely too much upon the bacteriological analysis once a month. The two factors, sanitary survey and analysis of samples, should be taken into consideration, always, to furnish a really true index to the character of the water. The water supply that shows the absence of B. Coli may not be a safe water supply, because there may be conditions existing which will make it unsafe at some other unknown or unsuspected time. We may have happened to get a good sample today, but the water may have been bad yesterday or may be bad tomorrow. The sanitary survey will reveal such conditions, but the laboratory analysis of the sample alone will not.

NORTH CAROLINA ANSWERS "PRESENT."

KATHARINE MYERS, R. N., RALEIGH

In this marvelous age of ours, especially in these post war years, a tidal wave of interest and endeavor in *child-saving* is sweeping the world. It is a far cry from Czecho-Slovakia to Old Mexico, but even from these two countries with all their unsettled problems have come recent reports of child welfare activities so astonishing they read like romances.

There is no need, however, to look to distant lands for the inspiration of great accomplishments. If we but review some of North Carolina's own achievements for the protection of motherhood and childhood we may be surprised to see how far we have come.

It is not possible nor desirable in a paper of this kind to compile a complete record of all the work done by the various departments of the State Board of Health, which may relate, either directly or indirectly, to this subject, but simply to note some of the milestones along the way will indicate that we are at least keeping step with our contemporaries. Nor can we at this time present anything more

than a word of appreciation for the many individuals and agencies, official and unofficial, who, in various ways, are contributing immeasurably to the cause of child welfare.

The well-being of the child and that of the general public is so inter-woven that whatever affects the one reacts upon the other, so the first step in any crusade as big as this, must necessarily be the broadcasting of general health information. For 36 years an important means to this end has been the Health Bulletin which has now reached a circulation of 52,000 and is sent on request to the people of the State. In addition to this there is a continually increasing demand for other literature of health subjects and the distribution of pamphlets and leaflets yearly approximates a million and a half pieces.

A study of the early history of our health work reveals many interesting items of educational and legislative effort, the latter, for instance, including as early as 1881, a law requiring the registration of vital statistics at the annual tax-listing, and others relating to contagious diseases, protection of children from epidemics, eradication of hookworm, etc. Through all the thrilling story of public health development in the State goes the record of the unfailing leadership of the medical profession who have "carried on" with amazing courage and vision.

About 1911 a better system of county health work began to evolve and gradually developed until now we have twenty-four co-operating, full-time county health units and several others working independently, all of these devoting their entire time to intensive public health measures largely affecting or directly concerned with infant and maternal welfare.

One step after another and we come to a red-letter year, 1916, the year North Carolina was admitted to the registration area of the U. S. for deaths and the following year for births as our registration was found to be 96% complete, thanks again to the physicians and others for furnishing the needful information. So now we have at our command the powerful spy-glass of facts, like the "Look-out on the Mountain" searching out county by county, and by age, race, and disease the unguarded places and pointing the way for action.

1916 saw also two other noteworthy events, first, a home post-graduate course in medicine, including pediatrics, reaching 169 doctors, and, second, an eight months study of infant and maternal hygiene in two counties of the State.

During this period one of the outstanding achievements of preventive medicine in this State or in the United States was developed and later successfully established. There are thousands of school children in Carolina today who owe improved health and a fairer chance in life and it may be life itself to the vision, courage, and singleness of purpose which has culminated in the economic correction of certain common defects of childhood, so detrimental to health and so insidious in their effects on the normal growth of both mind and body.

In the same year, 1917, the General Assembly stepped right out in the limelight and passed several important health acts, the one most apropos to this discussion being "An act to prevent blindness in infancy." Perhaps you are thinking subconsciously, "Just another law to clog the statute books," but fair evidences of its observance is found in the fact that in 1921 alone 51,883 ampules of silver nitrate solution were sent on request to physicians and midwives who are really meeting this obligation to a remarkable degree. Should they falter the modern mother is ready with a question.

During the next few years splendid progress was made with communicable disease work. For the treatment of venereal disease eleven clinics were established in as many of the larger towns, and an extensive piece of educational work carried on. Valuable assistance, financial and otherwise, has been given by the Federal Government, the American Social Hygiene Association, the American Red Cross, and the International Health Board. We are barely touching the fringe of this frightful scourge so devastating in its effects on maternity and infancy, but one of the most hopeful things at present is the new venture in co-operative clinics for economic treatment by private physicians.

Prophylactic vaccines of a high grade and low cost are widely distributed, reaching every section of the State and carrying to thousands of fortunate children protection from typhoid, rabies, tetanus, smallpox, whooping-cough, diphtheria. Better still, in 1921, immunizing doses of toxin-antitoxin were given to 10,607 children between six months and six years of age by co-operating physicians of the State, in addition to what was given by official county health agencies.

Then there is the famous, or infamous—as some of our leading citizens *used* to term it—sanitary privy law which is being enforced, and which means in time the practical elimination of one source of the dangerous, fly-borne, fecal diseases, especially the diarrhœas and dysenteries which attack our "second summer" babies.

Childhood has no more relentless, destructive foe than tuberculosis which has raged unchecked throughout the ages, but modern science has found some effective weapons and is waging a vigorous and continuous fight from every known angle. The National Tuberculosis Association, through the State Association and many local branches, assists in raising funds through the annual Christmas Seal Sale, and aids the State in promoting a number of highly valuable educational projects one of which is the rural diagnostic clinic by means of which thousands of incipient cases of tuberculosis have been discovered and placed under the care of physicians and the public has been widely informed as to the facts regarding the cause, prevention, and cure of this disease. If this great volunteer organization had done nothing more than launch the Modern Health Crusade—a system of teaching health to children through habit formation by the daily performance of certain chores—it would have justified its existence. Tens of thousands of school children in North Carolina have been enlisted in this movement which also furnishes a ready avenue for the correction of nutritional errors.

Late in 1918, a system of sending advisory letters to expectant mothers was begun, also the distribution of literature dealing with the care of babies, mainly the publications of the Federal Children Bureau. Later this type of work was expanded, the prenatal letters in revised form reached 10,465 women in the next two years and a leaflet on summer diarrhœa was sent to the mother of every baby born in 1919 and 1920.

The midwives were personally instructed by a representative of the State in a series of conferences covering 88 counties with an attendance of 1168, and by public health nurses with an attendance of 1150, resulting in a marked increase in birth reports from certain sections, in requests for silver nitrate, and in a difference in the reporting of prenatal cases by midwives of 48 in the year previous to the conferences to 834 since then.

The value of volunteer lay agencies in supplementing the work of official health agencies has long been recognized by the State Health Officer and so when in 1919 the assistance of the American Red Cross with its tremendous influence and world-wide prestige was secured to aid in the promotion of public health nursing another notable advance was made. The object of this alliance was not primarily to develop public health nursing, but to increase interest in and knowledge of infant and maternal hygiene and tuberculosis. However, as a by-product, the number of specially trained public health nurses in the State has increased since 1919 from 3 to 45, the work of every one touching at some point the problems of mothers and children.

These items from reports of public health nurses received from December, 1919, to April, 1922, are significant as showing the trend of this work:

Prenatal cases reported for literature	5,998
Instructive infant welfare visits	15,633
Young children weighed, measured, and mothers advised regarding diet	7,034
Instrumental in getting sanitary privies installed	1,066
No. of classes in home nursing	113
With attendance of	8,625

The class teaching was the standard Red Cross course of fifteen lessons in Home Hygiene and Care of the Sick with emphasis on infant hygiene and tuberculosis.

And last, and perhaps most fundamental of all, the Little Mothers' Leagues, a course in baby care, given to 1,010 girls under sixteen, the instruction given by city, county, and industrial nurses according to a uniform plan and syllabus.

Every girl is a potential mother, and this is the time to teach—between ten and sixteen—and when we become sufficiently impressed with the everlasting truth of this idea we will demand that a place be made in the grammar school curriculum for the study of infant hygiene. Victor Hugo said "There is one thing that is greater than

armies and that is an idea when its time has come." May not this be the idea and this the time? And may not this organization whose avowed purpose is to raise the standard of public health to a higher level find the key to this door of knowledge and open it wide? That day is coming, and when it does we shall advance in *child-saving* far beyond our dreaming, and then, indeed, will North Carolina not only answer "Present," but march up with honors to the head of the class!

DISCUSSION

Dr. Smith, President: I feel much indebted to Miss Myers for bringing out the details of public health history in North Carolina. I would not say that her paper is supplementary to mine, but it certainly fits in.

Dr. J. H. Hamilton, Wilmington: I think Miss Myers's paper is very admirable. There are at least three points I would like to emphasize. One is the prenatal letters which Miss Ehrenfeld's Bureau is getting out, nine or ten letters. In our county we have gone into the matter very carefully, and have given copies of the letters to all physicians practicing obstetrics. An opportunity has been given them to criticise the letters, but no criticism has been offered. On the other hand, a considerable amount of praise has been given. In our county we hope to get these letters to every mother whom the physicians wish to receive them. We intend to require our midwives to give the name and address of the patients whom they expect to deliver, and we expect to run an advertisement in the newspapers informing the expectant mother that she can get these letters. We do not want to make the reporting of pregnancy compulsory, but we do want to give the mothers a chance to get these letters.

The Little Mothers' League has done a great deal of good, not only by helping to save the lives of little brothers and sisters, but by educating the mothers and by preparing girls to be intelligent mothers.

Another point I want to emphasize is the education of the children. That is of vital importance, for through it we often educate the parents.

PUBLIC HEALTH WORK IN THE SCHOOLS OF ROBESON COUNTY

E. R. Hardin, M. D., Lumberton
Health Officer, Robeson County

My subject today is one of considerable latitude, comprising as it does practically every phase of public health work, as it relates to the school child, and the public school.

I have tried to confine myself as far as possible to a practical discussion of work performed and methods used in accomplishing same.

In Robeson County schools, public health work is largely a rural problem. The county of Robeson has an area of 990 square miles, 163 public schools, and 19,000 school children. It has been my responsibility since September, 1919, to render public health service according to my time and ability to this great body of school children. Unfortunately I have not had the assistance of a nurse in this work.

When I accepted the position of health officer in Robeson County, September, 1919, I determined to devote a great part of my time to school work. Records on the physical examination cards of the State Board of Health for many of the schools were in the office, but cards had not been made for a great many more. A great many of these cards were of little value as the teachers had not understood how to make the examination; especially was this true of the colored schools. Many of the teachers consider this work a nuisance, and take little interest in it. I think the indifferent attitude of the school authorities is largely responsible for this. Teachers should be required to familiarize themselves with this work, and do it properly, or else they should be relieved of this responsibility.

When I visit a school the first time for the purpose of examining the children for physical defects, I have the principal assemble the whole school, and explain to the children the purpose and scope of the examination. This I find stimulates co-operation and relieves fear. Pamphlets on adenoids, defective vision, etc., are given out to each family represented in the school. Wherever possible a separate room with good light is used for examination work, and if one is not available it is obtained by having one of the smaller grades dismissed and using its classroom. The routine examination of the eyes, ears, and throat is simple, but often tedious and difficult with the smaller children. I have found that a great many of the first grade children do not know their letters, and for these the object charts have to be used in the vision test. If the teachers' part of the examination has not been made properly, I make a complete examination of each child, and have the teachers' part of the card as well as the medical inspector's examination filled in. In many schools where no cards have been made the teachers were given blank cards, and instructed to do their part of the examination as required by law. It is but fair to the teachers to say that most of them complied with this request.

Since I began work in Robeson County about two years ago, the children of all white schools, and the larger Indian and colored schools have been examined for physical defects. Out of the three thousand school children examined, approximately 35% were in need of operation for enlarged tonsils and adenoids, 10% had defective vision, and 1.3% defective hearing. Nine per cent of those with enlarged tonsils and adenoids were found to be in urgent need of operation. Unless the defects of vision and hearing was greater than eight over ten I rarely recommended examination by specialist. On my return visits to a school I find that a great many of these children previously examined have had their tonsils and adenoids removed, or their vision corrected by glasses. I had 57 of these tonsil and adenoid cases operated on in a State Tonsil Clinic. More than half of all children ex-

amined were found to be in need of dental treatment. During the last four years we have had 2,000 of these children treated by dentist from the State Board of Health; many others have been treated by the local dentist. On account of the frequent moving of tenant families, the change of teachers, and the custom of many children staying out of school to do farm work, it has been impossible to get accurate data as to the number of school children having defects remedied.

In many of the schools one or more children were found that were mental defectives, either from inheritance or other cause. An effort is made to place as many of these as possible in the State School for the Feeble Minded, where they will have a chance, and to take them out of the already overcrowded schools where they have been a drag often for years. I have found a number of school children with orthopædic defects, most of them following infantile paralysis. I am endeavoring to have all these children that can be benefited, treated at the State Orthopædic Hospital, Gastonia. Our efficient Welfare Officer, Miss Elizabeth Frye is taking an active interest in this work, and usually accompanies the children to the different institutions.

Realizing the great prevalence of hookworm infection among the children of the county, and the roll that the rural school with insanitary privies or no privies at all, play in the spread of the disease, I have made a special effort to get two sanitary privies at every rural school. This was done by taking up the matter with the school committeemen and teachers, and explaining to them the importance and necessity of sanitary school privies. A great many school privies were built; in fact too many to suit the Superintendent of Schools, as he complained that the committeemen were having them built, and then bringing him the bills for same, when he didn't have the funds to pay them.

Inspection work in the white schools showed such large numbers of clinical cases of hookworm disease that I decided to make microscopical examinations from schools in all parts of the county, to ascertain the per cent of infection, and at the same time to treat those found infected. Specimens of stool from 1,040 children in 28 different schools were examined with the microscope, and 427 or 40% were found to be positive. All of these were given three treatments each oil of chenopodium. Specimens from 98 of these children were re-examined, after they had taken three treatments each oil of chenopodium, and 31 were found to be positive for hookworm. A good many of these children, however, did not take the treatments given them. In the above examinations the specimens were not centrifuged, direct smears were used, and one large slide made as a rule for each specimen.

Contagious diseases have made their inroads on the schools of Robeson County, as in other parts of the State. In 1919 and 1920 it was mainly diphtheria, measles, and scarlet fever; in 1920 and 1921 diphtheria, whooping cough, and measles; 1921 and 1922, chickenpox, whooping cough and diphtheria.

When a contagious disease breaks out in the school district the teacher is promptly notified of same, and instructed to exclude all children in families where the disease is present. When possible, I visit the school, and discuss the disease with the teacher and children, and try to enlist their co-operation, and urge them to report any other cases in the community, promptly to my office. Literature on the particular disease is given out to the children to take home. I find that teachers often allow children to come to school with a contagious disease when they have suspected the trouble. The indifferent attitude of many parents is largely responsible for this. I have found that a few careless or intimidated teachers, and a number of hard-headed, ignorant or misguided parents are responsible for most of the spread of contagious diseases in the schools and community.

I have observed that diphtheria reports each year from certain communities are always high. This is probably due to the presence of "carriers" in such communities. We have several such communities in our county. I decided to try out the Schick Test in the schools of these communities, and 1,110 children were tested, approximately 30% of these showed positive. Three hundred and twenty-six children found positive were given the complete toxin-antitoxin preventive treatment. The work was not satisfactory, because the parents of a large number of the younger children refused to have them tested, although a long letter of explanation had been sent them. The toxin for the Schick Test was obtained from the New York Laboratory. My experience with the Schick Test, though limited would lead me to believe that it is impractical for routine use in the schools, but that it might be used to advantage in the communities where the incidence of diphtheria is always unusually high. In such instances all children should be required to take the test, and if found to be positive, should be required to take the toxin-antitoxin preventive treatment. When we consider the fact that many counties have a law requiring all children to be vaccinated for smallpox, when smallpox is spreading in the school community, this does not seem unreasonable.

An effort has been made to vaccinate as many school children as possible against smallpox, for future protection to the public as well as the school. This work has been confined largely to the colored schools, as nearly all our smallpox has occurred among the negroes. Smallpox has not been reported in the city school at any time, and only two cases have been reported in the county this year. Thirteen cases were reported in the county last year.

After several unsatisfactory experiences I have concluded that compulsory vaccination should be restricted to school communities in which smallpox is present. We have a law in our county that requires all school children in the district to be vaccinated when smallpox is present in the district, and this law has been enforced thus far. My best results however have been obtained by the voluntary method, the work being confined largely to the colored schools. Since January, 1920, 3,162 school children have been vaccinated for smallpox. When I visit a school to vaccinate for smallpox, I have the principal assemble the whole school and try to give them a good word picture of

smallpox, and smallpox vaccination, and the necessity of being vaccinated. I then pass out to the children the State Bulletin on smallpox and let them get the actual picture of people with smallpox, and people with vaccinations. After this they are told to roll up their sleeves and get in line if they want to be vaccinated. They fall in. Call it mass, psychology or what not I have vaccinated 80% to 100% of all children present in the schools that I have visited for this purpose. I use the State Board of Health vaccine, and have gotten 90% takes in all instances where the vaccine used was reasonably fresh. I use the army method in vaccinating, namely making two parallel scratch marks well spaced on the upper left arm. The arm is cleansed with alcohol and no dressing is applied after vaccination. Iodine is left with the teacher, and she is instructed to paint the vaccination wounds daily from the sixth or seventh day for a week or more. In this way out-side infection is avoided when the scab is scratched off. I have had no bad arms where this method was used.

The work has been for the most part pleasant, and I feel that a great amount of good has been accomplished; but when I think of the thousands of school children suffering for the need of a simple operation, I am forced to conclude that the medical profession is neglecting a great opportunity to strengthen its position with the public, in this day of quackery and new cults.

The problem of removing the physical handicaps of the public school child, is a big one, and will require the active co-operation of all agencies concerned, the health authorities, the medical profession, and the public. The medical inspection work in the schools has prepared the ground for the ultimate solution of this problem. The public will place the responsibility for its solution on the medical profession where it rightly belongs. If we are to merit this confidence, on the part of the public, then we must adopt the policy of service first. If we recognize the medical profession as a creature of society, then it is our duty to seek the good of the social whole, knowing that our ultimate good is wrapped up with it.

As Dr. McAtee has so well said, in his admirable paper, "We may need to stand together for justice in the days that are to come; we may need to witness strongly for truth; but we shall not have to fight for existence, so long as we follow the path of service; for whoso thinketh to save his life shall lose it; but whoso loseth his life for my sake shall find it."

HEALTH WORK IN THE SCHOOLS

R. L. Carlton, M. D.
City Health Officer, Winston-Salem

Among the resolutions adopted at the Cannes Conference in 1919 occurs the following:

"That the training of school children in all grades by thoroughly qualified teachers in the subjects of personal hygiene and the inculcation of proper health habits during school life are perhaps the most

important undeveloped measures for permanently improving the health and contributing to the welfare of the people." Dr. L. Emmett Holt endorsed the resolution not long ago and continued by saying: "No matter what particular phase of the health field we are considering, in the last analysis we come to the fundamental fact that progress depends upon the personal hygiene of the individual, his food, his health habits, etc."

It is not my intention to attempt a discussion of the entire program of health work in the schools, but simply and briefly to mention the various activities of health work in the schools of Winston-Salem during the past few years, and to call attention a little more in detail to one or two features which to us have been very interesting, and, we think, worth while.

We have 10,000 enrolled school children. Five or six years ago the first systematic health work in the schools was begun. At that time, the health officer and two nurses, one white and one colored constituted the staff of school health workers. The work has grown here, as everywhere, and the staff has gradually been increased until consisting now of school physician, devoting practically all of his time to school duties, health officer, who does some school work, and ten nurses and supervisor. Of the nurses seven are school nurses proper, two are nutrition workers and one is the directress or executive leader of the Modern Health Crusade.

Health work in the schools of Winston-Salem is definitely under the supervision of the department of health. No part of the expense of this activity is borne by the board of education, which board however is thoroughly in sympathy with health work and co-operates fully.

Examinations, as schools begin, find some diseased conditions, for which temporary exclusions are made, and many physical defects. No written notices are sent to the parents concerning the child's defects but the nurse makes a personal call and follows this with another visit and another and another if necessary—until finally the very persistence of the nurse, if nothing else, gets the attention of the father or mother to such an extent that the defect in question is corrected.

Nearly 100 children had diseased tonsils and adenoids removed last year as a result of this activity, more than fifty of this number having the necessary operation without cost to the parents. Other defects were corrected in like proportion—more than 1,200 children had free dental work done during three months last fall—the point is, a large proportion of these children would not have had this corrective treatment done but for this work in the schools but would have gone along, handicapped through school and possibly all through life.

The prevention of sickness then, by the prompt recognition and exclusion of ailing children and securing the correction of physical defects make up an important part of the school health program.

The program to be most effective must go further than this however, and must so train and instruct the child that he is given a correct set of health habits and an understanding of the hygienic conduct of life. The program, therefore, should be made up of health

protection, correction of physical defects and health promotion. It is in relation to health promotion that I wish to say something of the Modern Health Crusade and special nutrition class work.

MODERN HEALTH CRUSADE

We have had the Crusade in Winston-Salem schools for some three or four years but because of scarcity of nurses and lack of interest of teachers, which lack of interest was largely because of lack of time for this particular work, the movement did not attain the success it deserved. At the beginning of the 1921 school year the Crusade was placed on a more substantial basis than it had been before. The time of one nurse is given entirely to this—she is called our Modern Health Crusade Executive and is made responsible for the maintenance of groups of Crusaders in every school. Forty classes of nearly 1,500 boys and girls are enthusiastic Crusaders in our schools now, and that these youngsters have derived benefit from this organization there is no doubt.

The Modern Health Crusade seeks to put into practice health education in the schools. It has made instruction in hygiene practical for it has put the child to doing the personal health duties that have previously been defined in hygiene classes but have not been done.

The Health Crusade, is, as you all know, really a game made up in a most interesting way of health rules or chores which the children are to observe regularly and for a certain number of weeks and for doing which they are given rank of page, squire, knight, knight banneret, etc., and are awarded certain buttons, badges and certificates to denote their rank and standing among their fellows. When these things are put up to the children in a story-telling way by teacher and nurse and Crusade Leader and in addition the spirit of competition between the different groups of children is instilled, and their interest is kept up by songs, health plays, etc., all through the year, they become very enthusiastic and the changes wrought in some of them are little short of marvelous. One father told me he was astonished that his little daughter who would not drink milk and could not by any parental devices be persuaded to do so, immediately decided she must take not less than two or three pints of milk daily when she was informed by the nurse that she was underweight and the Crusade Leader told her she was not keeping up with others in the "health game" and that she was violating some of the "rules of the game."

A mother was pleased but somewhat piqued when she discussed the Crusade with the leader. "It's positively discouraging," she said, "to learn that a perfect stranger can convince Tommy in a half hour, that he should brush his teeth, when after years of trying, I haven't impressed him at all. He came home one afternoon and announced that he must brush his teeth twice a day as though he had never heard of it before, and now he actually does it and seems to like it."

The secret of the success of the Crusade is not far to seek. It makes the practice of health a game. The pupils learn by doing.

Health habits are encouraged and established by group action. Washing the hands before meals, cleaning the teeth, sleeping long hours and with the windows open, exercising in the open air, eating slowly, wholesome food and taking deep breaths and frequent baths, come to be accepted as matters of course.

Altogether it is believed that the Modern Health Crusade with its health rules or chores, its prizes and awards of rank, its recognition from time to time of little health plays enacted by the children themselves, keeps them interested, goes a long way toward making these things become lasting, fixed habits and really points the way to a successful method of teaching personal hygiene in the schools. It has been gratifying to note with what interest and persistence the hundreds of our children did their chores, received their rank, etc.; it has been pleasing to note from time to time the requests of teachers and pupils of grades in which there were no crusade classes that they be given this work also; and it has been very interesting to note with what zeal the colored children go about this phase of health work, the Crusade Leader reporting that a smaller percentage of colored children drop out for various reasons before completing the period than is the case with white children.

We are glad to learn that the National Tuberculosis Association is now working on the material for graded courses of Crusade work and that this material will be ready before the opening of schools in the autumn of this year. This grading will undoubtedly add much to the interest of the Crusade in different school grades and will enable it to be carried on for longer periods of time. We plan to extend the Crusade here to many classes next year which did not have it before. We hope you all will be present tonight when a group of Crusaders from one of our schools will present a little health play entitled "The Health Champions."

NUTRITION CLASSES

The systematic weighing and measuring of the school children had shown that there are a large number who do not weigh as much as they should at a given age and certain height. A careful going over of these children showed that a majority of them are undernourished, or are suffering from malnutrition. Children of this class were not confined to any particular section of the city or to any special school but some were found in almost every room of every school, and, while a majority of these undernourished children were from homes of the poor there were quite a number from well-to-do families or even from homes of wealth. The matter of nourishment then, or rather, lack of proper nourishment was seen to be one of not knowing just what foods the child should have more frequently than was supposed to be the case. Children who are underweight, are generally puny, anemic, flabby muscles and have a terribly difficult time keeping pace with their more robust mates, either lagging behind in their classes or holding back with them the entire group. They are easily fatigued and find it next to impossible to take the active physical exercises they

should be taking and enjoying. They are the children who are most frequently sick and who are most susceptible to the communicable diseases—especially is this true of tuberculosis. It is common knowledge that anemic, undernourished children are easy prey to tuberculosis if exposed to it.

To properly care for these children and have them attain such physical condition that they would no longer be listed among the "underweight" and "mal-nourished," it was recommended that special classes be formed and that experts in matters of nutrition be placed in charge of them.

The American Red Cross made this possible by giving us last year two workers, one white and one colored woman, who know how to teach little folks the things pertaining to diet and nutrition in such a way as to make it attractive and desirable that they gain weight and reach "normal."

Several hundred children were grouped into "nutrition classes." No child was enrolled who was not 10% or more below normal weight. The school physician and nurses assist in locating in the children any diseased conditions or physical defects which might prevent their being "free to gain." Teachers, nurses and directors of these classes unite in trying to determine what the home conditions of the child are, whether there is good home control, whether he is worked too hard outside of school hours, whether there is lack of proper food on account of economic conditions and whether the health habits of the child are good, etc.

In the classes instruction is given in matters pertaining to nutrition in terms of cereal, milk and vegetables, rather than of protein, fat and calories—the children are told just what to eat and how they should eat in order to become strong and robust and enable them to develop into real men and women. They are encouraged to make use of the lunches provided at the lunch rooms of most of our schools. If the child brings a cold lunch with him from home he is encouraged to buy something hot to eat with it. It is especially pointed out to them that milk is one of the most important articles of diet and that many of them underweight simply because they are not drinking enough milk. They are encouraged and urged to drink milk which is supplied to them at all schools at reduced rates, and in many instances is given to them—at least a pint a day without any cost.

Each child has his name placed on a large chart on the wall of the room and lines are drawn showing what the child should weigh and does weigh; at the weekly meetings he is weighed and the weight line on his chart is extended accordingly. The child becomes interested at once in noting whether his weight goes up or down and it is not difficult for a worker who knows the game to cause the child to become willing and anxious to do as nearly as possible everything he should do to gain weight.

This work in the schools is supplemented by periodic visits by nurse, teacher or both to the child's home, to secure the assistance of the

parents in having the child follow a definite regime in respect to exercise, hours of sleep, periods of rest, the eating of proper food and ventilation of the bedroom, etc.

As often as possible the mothers of the children in these classes are asked to meet with them in their regular weekly session. Good results are secured in this way.

Again, the nurse and nutrition worker have from time to time held meetings at the school house for mothers only, when they have explained to them in detail just what is being done for their children and how the help of the mothers is needed. Such meetings have been well attended.

These classes afford interesting study. Not all the children have gone "over the top" of course, but a goodly percentage of them have and almost all of them have shown gains where it is possible to do so.

Nutrition class work has been done in our schools less than a year. The worker in the white schools only a few weeks ago awarded 60 children certificates of graduation as having reached normal weight for their age and height and has dismissed them from the nutrition classes. She tells me there are at least 75 other children who are now within five pounds of normal weight and will in all probability be graduated and receive a diploma before the schools close. The children call this "eating for a diploma" and show much interest in their charts and diploma but almost invariably object to being dismissed from these classes.

It is not claimed that nutrition work in the schools is any more than one part of a good health program, but it is an essential part and has proven its value by definite results.

We have all seen many undernourished children and considered it nothing unusual, but when one looks into the pale faces of 75 or 100 undernourished children one is impressed with the fact that there is something wrong somewhere. If all the severely undernourished children in Winston-Salem, or any other city, could be brought together, it no doubt would convince the most skeptical that more attention must be given to malnutrition.

We repeat, in our opinion, the well rounded program of health work in schools should be made up of health protection, correction of physical defects and health promotion, and that important places in health promotion are occupied by the Modern Health Crusade and Nutrition classes. Such a program is practical, can be applied to the rural schools of 100 pupils or the city's group of schools of several thousand students and is no less than our boys and girls should have if we hope to develop our future citizens as they should be developed.

DISCUSSION

Dr. C. N. Sisk, Winston-Salem: I agree thoroughly with Dr. Hardin in every respect except compulsory vaccination. I really want Forsyth County to have compulsory smallpox vaccination. While I have, in my work, succeeded in vaccinating practically fifty per cent

of the school population, at the same time I believe that compulsory vaccination is as essential in the rural districts as in the cities.

I agree with Dr. Hardin that the assistance rendered by the average school teacher is very poor. From the great majority of the cards you do not even get the date of birth, and the contagious disease record is frequently entirely absent. My idea in the rural work, where the schools are distributed over the county, is to cover the schools personally every second year and give a thorough physical examination to each child, which is equivalent to examinations in the first, third, fifth and seventh grades. After the children go into the high school grades I do not examine further except to try to get corrections made in those found defective by previous examination.

The matter of corrections is, of course, very difficult. I have serious doubts as to whether the State Board of Health idea of free tonsil clinics is best in Forsyth County with four capable specialists. When it is advertised in a county that possibly within twelve or eighteen months they can get this done free, it is much more difficult to get it done by local physicians.

In Forsyth County Dr. Carlton and I have a combined free clinic for dental work, and my hardest work is to get the children to come in for treatment. I have very much difficulty in getting any response at all from the smaller schools. In regard to dental defects, I believe as good a plan as any is to refer every child under thirteen years of age to the dentist without examination, and repeat every year. I feel that to get value received for the money spent for the dental clinic in Forsyth County, we should have the dentist go to the schools. I know that he objects to it and that it is not the ideal, but it is the only way to reach what we may call the backwoods child.

Dr. J. A. Morris, Oxford: Dr. Sisk is right in wanting to make compulsory vaccination universal. While you are waiting for smallpox to appear in the community it might appear in the school, as it did in my county, in a two-teacher school of 102 pupils. The invasion was in the school itself, showing the necessity of preventing its entry into the school.

Dr. Wm. M. Jones, Greensboro: I am certainly opposed to any compulsory vaccination. We have too many laws now. If people are going to have smallpox, let them have it. I remember one little town where I could not get any results until I went there in my car with a negro who had a bad case, and in less than twenty minutes every vaccine point in the town was used up.

Dr. E. W. Larkin, Fayetteville: In Cumberland County we passed a compulsory vaccination law last April, 1921, just a year ago. Last winter we had only one case of smallpox, and that was brought in from South Carolina. The winter before that we had about 150 cases. The law worked well, and we did not have any opposition in the schools or anywhere else. It was compulsory only in the schools, but a great many families were vaccinated, too.

Dr. R. S. McGeachy, Kinston: In one school in my county we found defects in two of the children of a leading physician, and the statement of the defects that we sent made that father sit up and take notice. One child was getting so that he could not read a newspaper, and the father had his eyes examined by every physician in the neighborhood and later in New York. The child's tonsils and adenoids were removed, and now he can read without glasses. A leading lawyer in my town had a child whose tonsils were removed and he asked me to write a statement for him to sign. He said that he would sign without reading any statement that I might write, in appreciation of the value of this work. In one school twenty-five of the older pupils had tonsils removed, and one child said that she would not have her tonsils back in her throat for a thousand dollars. One only said that she saw no difference. We had a tonsil and adenoid clinic put on in our county, and in ten days 85 children had tonsils removed. We hope to have another next year.

Dr. McNairy is here, and I would like to hear from him on this subject.

Dr. C. Banks McNairy, Supt. Caswell Training School, Kinston: So many things might be said in this connection, but there is so little we know. Some of the statements made here this morning have been startling, to my way of thinking.

I would like to corroborate Dr. Carlton in regard to nutrition. I was called some time since to examine children for admission to our institution. (This is something that we do not generally do, but I went because the gentleman in charge of the health work there is a special friend of mine.) In one day he brought in about 65 children. I do not think a child in the bunch was up to normal in nutrition. I do not think they had ever had the proper amount of food, not a balanced ration. I am a mountaineer, you know, but I have been living in the east for a long time. The east is always throwing off on the mountaineers, but I tell you, gentlemen, that in the eastern part of North Carolina the average white child has a poor chance. He lives on white meat, a little molasses, a few collards, and occasionally a boiled potato. There is no milk in eastern North Carolina. I do not beileve that one farmer out of twenty-five has a cow. I think Dr. McGeachy, our Health Officer, will bear me out in this statement. Something must be done about it. I do not know how we are going to educate the children. The advancement must come through the schools, but how can we educate them when they have faces like dough and are formed like wasps? Half of our teachers do not eat enough, and the other half do not sleep enough.

Dr. W. M. Jones, Greensboro: Education is the foundation of all we do. It is the bed rock of public health work. This other work is simply secondary and for the moment. The corrective work, when done, in the majority of cases is done for the individual, and for the individual, *per se*. It begins and ends with the individual. That is all right, and I am not decrying corrective work, but I do not think

that the end is anywhere near in sight. It is like the description given by an old negro preacher of eternity, when he said: "If a sparrow were to take one drop of water in his beak, from the Atlantic Ocean, and fly across to the Pacific Ocean and drop it in there, then fly back to the Atlantic and repeat this until he had emptied all the water of the Atlantic Ocean into the Pacific, by the time he had completed it the first day of eternity would just be dawning." That is the way with corrective work.

Education is the only way to bring results, and I do not believe that anything will be of more value than the Health Crusade work. That is the work of not one genius, but many, in my opinion. The Health Crusade work is based upon the fact that if you can direct or interest a child, or get him to do a certain thing willingly for a certain length of time, say sixteen weeks, this will become a habit. It is somewhat like old Solomon's dictum, "Train a child in the way he should go, and when he becomes a man he will not depart therefrom." They get these rules well fixed, they form habits, and they see the benefits. I do not believe that there has been another thing in my county that has been of as great value as the Health Crusade work. Next to that are the nutritional classes and the nutritional work. There is a great per cent of these children, as Dr. Carlton says, whose weight can be brought up to normal. There is a small per cent that have certain physical defects, and those you can find in the children that do not drink milk. I speak particularly of milk. We are a little more fortunate in this section of the State than those in the eastern part, for the farmers have cows and it does not seem to be very much trouble to get the milk.

I want to call attention to one school, a little one-teacher school in a poor section. In this school there were a number of children under weight. The teacher was an exceptional one, and we took up the question of nutrition with her. It seemed to dawn upon her all at once, and she carried it on far beyond what we anticipated. There was a big stove in the schoolroom, and each child was told to bring a vegetable or some chocolate, and each day during the winter they all had hot soup or hot chocolate. It was surprising to see how they came up to normal. So I think that the Health Crusade and the educational work will do more good than all the rest put together.

Dr. J. S. Mitchener: I think we all agree with Dr. Jones that we must educate, but when we educate we must provide means to carry out what we have taught. We can teach children about nutrition, but if the child can not get milk what good does it do? We can educate a man that he has syphilis and that he will die earlier, or will hand down congenital syphilis, but if we do not provide treatment, what good does it do? We have to educate, but we also have to go further.

RELATIONSHIP OF THE PUBLIC SCHOOLS TO THE HEALTH DEPARTMENT

S. B. Underwood
Supt. Raleigh Public Schools

I am glad of this opportunity to express publicly in some measure the appreciation which I am sure all the school men of the State feel for the work of the health agencies that are doing so much to put North Carolina forward. From State Health Officer down, we feel that we are greatly indebted to you and are proud to work alongside you. In analyzing the remarkable progress made in public education in North Carolina in recent years, I am sure that your work is responsible for a great deal of the improvement that has come about in the school room.

When you have set a community forward along health lines, you have made it at once an easier place in which to develop wholesome educational sentiment; conversely, when educational sentiment runs high it is easier to do effective health work. I am sure that you will find the largest percentage of typhoid vaccination and the smallest proportion of all preventable diseases in the communities that have the best schools and have had them for the longest time. In my own experience, I have invariably found that my own work was easiest in those communities where the health department was flourishing most effectively.

It has been my good fortune for the past eight years, the first seven as a County Superintendent and the last in city work, to work in close conjunction and co-operation with a well-organized and efficient department of public health. In each case, the department has been my strongest ally, its directing head a close personal and professional friend—a sort of companion in arms. I am convinced beyond the possibility of doubt that it has made my work incalculably easier; I should like to think that I had made some contribution to the success of his task.

A county or city superintendent of schools, a teacher or principal, or anyone connected with the school system, who is unwilling to go out of his way if necessary to render assistance to the Health Department is very much in his own light. We are working toward a common end. Why not join hands and work together for its attainment?

The school forces have, or certainly should have, the confidence of the community. They should use this confidence to pave the way for the general and special work of the health department. The health officer or any member of his staff should have access to any school at any time when there is a piece of health work to be done. And the school board should not hesitate to use its influence to create favorable sentiment for the health department. In fact the department should be regarded as a part of the educational organization.

The county or city superintendent should make it a point to have the health officer appear before the teachers and school committeemen to outline his policies and enlist their support. The children should be taught the workings of the department as a vital part of the county government and be made familiar with its plans and its methods. The health officer should be invited to the schools and be given an opportunity to get acquainted with children and parents. Literature of the department should be distributed in the homes and studied in the schools. In this way sentiment can be created for the work of the department.

Not only should this educational work be done, but the department's authority in health matters should be clearly and definitely set forth and fully acknowledged. I have on more than one occasion referred matters to the health department that I could easily have handled myself, because I wanted teachers or public to get in the habit of consulting this officer.

It goes without saying, I hope, that the department's regulations should be carried out to the letter and every requirement scrupulously complied with—and complied with promptly and with the utmost cheerfulness. Not only should the school teachers and superintendent do what is required, but they should look for and search out opportunities for the health department to function.

There should be no suspicions, no jealousies, no bickering, no strife —but a full and free working together for the common good. We are all anxious to have a stronger, healthier, happier citizenship. Why not pool our resources? Let every school be an outpost of the health department, ready and anxious to aid in the conservation and enrichment of human life.

DISCUSSION

Dr. S. E. Buchanan, Concord: Personally, I am in a county where the Superintendent of Public Instruction does not do anything, and it makes it awfully hard. Every time I try to do anything in the schools he comes along and tells the teachers that it does not amount to anything. If there is to be a teachers' meeting and I ask for an opportunity to talk to them, he never thinks of it until the day after the meeting, when he will tell me that he forgot it. I would like to have the pleasure of working in a county where the superintendent and teachers will help. If they do not care you have an uphill job, and it makes the work very hard. I would like to know if there are any other men in the room who have had the same experience. It is a case where education does not count. Sometimes we have to educate education.

Dr. J. Howell Way, Waynesville: Right there, is one place where there is yet, I might say, almost pioneer work to be done. Take the first grade of the schools of the State. There are a lot of little tiny human animals, averaging say forty pounds. They go to school until they average more than one hundred pounds. Now, the school system

seems to assume sometimes (I think you ought to exclude the first grade) that it is purely an educational, purely a mental development proposition. Not so, for that animal has to add two hundred per cent to his physical status from the time he enters school until he leaves it. Then there must be many, many points where it is most vital indeed to successful development of that little human animal to have him in contact with the medical man. The function of the school physician, the work of the school doctor, is yet an undeveloped and unexplored and, to the majority of us, almost an unrecognized field in North Carolina. Now, some one said this morning that to educate the children we have to go back and educate the parents. That emphatically is true. I regard the meeting of the county superintendent of health with every teacher in a conference at least monthly or better weekly, as a very necessary and very vital part of public health work. How are the tonsil clinics, the nutrition problems, to be worked out? We often hear it said that if the doctors at large do not arise to the importance of the situation, this work will be influenced wholly by the laity. Now, the average doctor is doing about the best he can. The ethics of the profession, the time-honored precedents, we have still great respect for—precedents especially along the line of modesty and diligence, not over-self assertion, etc.! Now, the average doctor has a very limited opportunity to really develop hygiene and preventive medicine in his clientele. People like change. There are perhaps not nearly as large a per cent of the people in a community who grew up under a family doctor as in the generation past. We live in an age of hurry and bustle, and there is a very large per cent of people who try the last doctor who comes to town, who put off the old doctor like last year's overcoat, and try anything new. Now, a doctor comes in and does what he is sent for to do. He is probably not there in the function of looking at the children's eyes and throats and to see about their nutrition. But the school doctor has a certain authority. He can call that little child on the third row and tell him to come to the office. He has a certain authority in that matter that the average doctor may not exercise. The matter of the school physician is a most important one, because of the number of people who grow up in neglect. As a government physician, in the handling of ex-soldiers, I find, in the average 300 soldiers I am caring for, the necessity of sending many of those young men to the hospitals for treatment, I find that I have to send from five to ten in for tonsillectomy each month, beside operations for hernia, varicocele, submucous resections, etc. Those are the things that should have been looked after years and years ago. With reference to the sub-standard condition of a great many of our people, the army examination showed that less than forty per cent possessed the mentality of a normal, well-developed twelve year old child.

Idealism is a fine thing, but no one can expect to get perfection in everything. I look upon this body just now. I heard that paper on water supplies this morning. I mentally wandered back to thirty years ago, when Dr. Wood and Dr. Lewis were pioneers in this work in North Carolina. I heard so much about what we did not have,

what we wanted it to be, and what we should do, and I thought that if the older Wood could be here this morning and see as large a gathering of men specializing in public health work as at that time attended the meetings of the State Medical Society, he would congratulate us upon our work.

Adjourned.

MONDAY, APRIL 24, 2:45 P. M.

AN ADEQUATE COUNTY TUBERCULOSIS PROGRAM

P. P. McCain, M. D., Sanatorium

Notwithstanding the fact that practically all the details necessary for the cure and prevention of tuberculosis have been known for decades, this disease continues its frightful ravages with but little abatement. In our own State last year it caused 2,600 deaths, nearly all of its victims being in the prime of life. Since there are nine active cases for every death, there are 23,400 people in our State now suffering with tuberculosis.

Even though we disregard the subject from the standpoint of our duty as humanitarians and as Christians, and consider it alone as a business investment, it will pay us to do whatever is necessary to bring this disease under control. Counting the value of the lives lost through tuberculosis, of the loss in labor and the expense of caring for the sick, a low estimate of the annual economic cost to our State is $13,000,000.

North Carolina is doing more than any other southern State to check its ravages, but our people as a whole have not attacked the problem with any degree of earnestness. What is the trouble? We cannot say it is a lack of money when our legislature last year appropriated $50,000,000 for the building of good roads, their action being applauded by the majority of the people in our State. We do not believe either that it is altogether because they do not realize that good health is vastly more important than good roads. Our people do not believe in halfway measures. And we believe they will cheerfully finance any plan for the control of tuberculosis, which will give promise of solving the problem.

In our State, which is largely rural, the county must be made the unit in the organization both for the prevention and treatment of tuberculosis. The following, we believe, comprise the essentials for the unit:

1. A country sanatorium.
2. Clinics, which are largely for diagnosis.
3. Visiting tuberculosis nursing service.
4. A live county tuberculosis association.
5. An efficient county health department.

It is universally recognized by those who have studied the tuberculosis problem that the sanatorium is a necessity. It is the bulwark around which all other factors in the fight must center. The State sanatoria, most of them, are splendid institutions and they do now and will always serve a most useful purpose in the control of tuberculosis; but it is impossible for State institutions alone to meet the needs. The advanced cases should not be taken a long distance from home where they cannot get to see their loved ones; and many others who could not be persuaded to go to a sanatorium at a distance would be willing to go to one in their own county.

To be successful the sanatorium must be a first-class institution from every standpoint—good enough for ourselves or for our loved ones. It must be equipped with an X-ray, a laboratory and all other facilities for the diagnosis and treatment of tuberculosis, and it must have a capacity sufficient for the needs of both the whites and the negroes.

All the larger counties, probably those of 30,000 or more population, should have such a sanatorium. Two or three of the smaller counties can erect one together, or each of the small counties can erect a building for its patients at the State Sanatorium. The former is a much more satisfactory plan, but either would go far toward solving the problem for the county which is too small to have its own institution.

The funds for the building and equipment of these sanatoria should be raised by the sale of county bonds and for their maintenance by a special tax, which should also be sufficient to take care of the interest on the bonds. The cost, just as is the case of the public schools, will be paid by all and will not be a burden on anyone. In this way it will be freed from the odium that is usually attached to a pauper or a charity institution. There is no more reason why one should hesitate to go or to send a loved one to such a sanatorium than he does to send his child to the public school or to accept the payment on a health insurance policy when he is sick. Those who are able should pay the full cost of maintenance and probably all should be required to pay something. Needless to say they should all be treated exactly alike regardless of the amount paid.

But no matter how fine the sanatorium buildings may be, its success will depend largely upon the man at its head. He must be an expert in the diagnosis and treatment of tuberculosis; he must be a man of at least fair business ability; and he must be a man who knows how to get along with folks and who loves his fellow man. Such a man will command respect of all and will secure the co-operation of the physicians throughout the county. If he is capable of teaching, there is no reason why, with such a wealth of clinical material at their doors, every physician in the county should not become proficient in the handling of tuberculosis. The more fully this can be accomplished, the simpler the problem becomes.

The success of the sanatorium will also depend very largely on its board of directors. This board should be representative of the medical, the governmental and the lay forces in the county. It probably

should be comprised of the county health officer, at least one other physician selected by the county medical society, the chairman of the board of county commissioners, a member selected by the county tuberculosis association, one from the women's clubs, and a live business man, probably a man selected by the chamber of commerce. Such a board will link up with the sanatorium the people and the organizations of influence and ability throughout the county.

Since an early diagnosis is the most important step in the cure of tuberculosis and also in the prevention of its spread to others, clinics for diagnosis constitute one of the most important factors in the handling of the tuberculosis problem. These clinics should be held if possible by the superintendent of the sanatorium and certainly under his supervision.

The physicians of the county need to be made to understand that the functioning of such a plan will not destroy their tuberculosis practice, but that it will on the contrary increase it by giving them the opportunity of becoming more proficient in the diagnosis and treatment of the disease. There will be such an awakening of interest in the prevention and in the early discovery of tuberculosis among the whole population that the number seeking examinations will be increased many times. In fact there will be a large number who will as a matter of precaution adopt the sensible plan of having periodic physical examinations.

These clinics will accomplish the most good if the physicians will look upon them as an opportunity for free expert consultation and will either bring or send to them their doubtful cases. A clinic should be held each week either at the sanatorium or at the county seat for both white and colored patients. Of course it should be understood that all who are not able to employ a private physician should be encouraged to come to these clinics. One of the most important features of these clinics also should be the examining of the other members of the family wherever an active case is found. In this way many cases will be found in the early stage which would otherwise become advanced before being discovered.

If these clinics are supplemented with a live educational campaign emphasizing the symptoms of tuberculosis and the importance of all persons with these symptoms being examined, there is no reason why practically every case of tuberculosis in the county should not be discovered in time to be cured.

To supplement the work of the sanatorium and clinics it is necessary to have an adequate visiting nursing service. Every case of tuberculosis should be reported to the superintendent of the sanatorium, who should send a nurse especially trained in the handling of tuberculosis to each case reported. If she is tactful, patient, sympathetic and efficient, there is practically no end to the good she can do. She can impress one with the seriousness of the trouble and at the same time inspire hope for recovery. She can emphasize the importance of rest and sanatorium treatment and teach the dangers of patent medicines and fake cures. She should furnish the necessary

sanitary supplies and literature on the cure and prevention of tuberculosis and teach the patient all the details of carrying out these measures. She should immediately make arrangements for the other members of the family to be examined by their private physicians or at the clinics. After gaining the confidence of the family, she can often by inquiry also find other suspicious or definite cases in the community.

A live county anti-tuberculosis association should be an important feature of the county program. It should function in close co-operation with the State and national anti-tuberculosis associations; some of its more important duties should be: the conducting of an educational and publicity campaign; the securing the interest of the influential people and the useful organizations, such as the churches, the Rotary, Kiwanis and women's clubs and the fraternal orders; managing the sale of the Tuberculosis Christmas Seals; looking after the needy families of the mothers or fathers who are sick; securing proper work for arrested tuberculosis patients; and the securing of the passage and the enforcement of adequate legislation for the prevention of the spread of tuberculosis.

Since the prevention of tuberculosis is even more important than its cure, and since prevention consists not simply in minimizing the distribution of tubercle bacilli, but also in maintaining the highest possible bodily resistance in order that the thousands already infected may not develop the disease, the problem of the control of tuberculosis is closely interwoven with the whole problem of public health. Without a live county health department, therefore, any tuberculosis program could at best be only partially successful. But close co-operation between the superintendent of the tuberculosis work and the county health officer and the various divisions of their departments will cut the death rate both from tuberculosis and other causes to the irreducible minimum.

Since children are especially susceptible to tuberculous infection, it is necessary in our tuberculosis program to lay great emphasis on those phases of the public health activities which have to do with the general health of the child. An effort should be made to wipe out diphtheria by means of toxin-antitoxin and to prevent the other childhood diseases during the age period when their danger is so great. Among the exciting causes of tuberculosis undernourishment has been found to be one of the most common. Special emphasis, therefore, should be laid on the nutrition clinics, in which an effort is made to discover and remove the cause of undernourishment. The importance of the medical inspection of schools and the removal of the defects found cannot be overemphasized. The Modern Health Crusade should be given all possible encouragement and assistance, for no agency has ever been so successful in teaching both the children and their parents the essentials of healthy living and in getting them to practice the rules of the game. This organization had an enrollment of 70,000 in North Carolina this year, and we hope it will rapidly increase until it shall soon enroll every child in our schools.

Such a program is not simply idealistic but is altogether practicable. Guilford and Gaston Counties have already voted bonds and a special tax for the erection and the maintenance of a county sanatorium, and we understand they are contemplating the adoption of some such plan for the handling of their whole tuberculosis problem. As soon as the other counties in the State see this program in action in these pioneer counties, we believe they will rapidly follow their example. The State Tuberculosis Association and the Tuberculosis Bureau of the State Board of Health are heartily in favor of this program and they will lend the force of their energies toward making it a success.

DISCUSSION

Dr. T. C. Quickel, Gastonia: It has given me the deepest satisfaction to hear Dr. McCain outline so well the way along which, I feel sure, we must go forward if we are to reduce the number of deaths from tuberculosis to the irreducible minimum. I am in full agreement with him as he has expressed his convictions in this paper. I have observed with interest and approval the work of the Bureau of Tuberculosis of our State Board of Health in its campaign of informing and educating our people as to the dangers, the cause, prevention and cure of tuberculosis. But they know, and all of you must realize, that their work has been largely preliminary, paving the way for more practical and energetic measures if we are to save the greatest number of lives. I feel that now we have arrived at that period of education at which we must move forward along the lines outlined by Dr. McCain. Tuberculosis is a disease that demands a stay for some time at a well regulated sanatorium if we are to give these unfortunate victims a chance to be restored to health and usefulness. Proper rest, food, ventilation, freedom from the work and cares and worry of home, can rarely be secured outside of a well regulated institution. With this assistance, experience has proven to us that many will recover. I feel that it is the duty of the people of North Carolina to provide adequate hospital facilities for these unfortunate people. Dr. McCain has named five agencies through which this work is to be carried on, and he has placed the county tuberculosis sanatorium first, for without it the one most needed agency is not available. I thoroughly agree with him in his suggestion that the county should be made the unit of our activities. With a county tuberculosis sanatorium, in charge of a capable, well trained man, to lead the other forces in this work, I feel that we should rapidly reduce to the minimum the deaths from this preventable disease. To you gentlemen who are in charge of the health work in this State I say that your duty is not done when you have vaccinated the children and looked them over physically, but we leave it to you to lead the people on until they will vote the necessary funds to build a county tuberculosis sanatorium. Do not forget that it is to you that the command comes, "Inasmuch as ye did it not unto these, thy brethren, ye did it not to Me." And, if you get faint-hearted, sing the old song, "Throw Out the Life Line."

HOW CAN WE REACH THE PEOPLE WITH THE VACCINES?

L. L. Williams, M. D., Mount Airy
Health Officer, Surry County

We realize that we all are perfectly capable of administering the vaccine to the people and we know that the vaccines that we advocate have been tested and the results proven to be very gratifying in the way of prevention, but we cannot vaccinate the people unless they are willing to take it. So then it drifts back to the basic principle of public health work—*Education.*

I feel at times that we neglect to a certain degree the educational program, in fact we are of the opinion or rather take it for granted, too much, that the people know all about the vaccines, their value in prevention, etc., and wonder why they do not come out and be vaccinated.

So in the title of this paper, "How Can We Reach the People with the Vaccines," it is my aim to try to bring before you the problem of health workers in carrying information about vaccinations to the public and persuading them to accept it. There is not a health department in North Carolina that could not vaccinate the entire population of their county if the people would accept it. So then it seems that we as health workers are falling down as salesmen. I use the term salesmen here because I feel that there is a need for a Health Officer to learn salesmanship. Public Health work is sold by the government, State and county officials, so in turn it seems that it is up to us to sell it to the people. One striking example that I recall, of the sale of the vaccine, was that put over by Doctor L. J. Smith in Wilson County wherein he sold to the business men of the county in this way. He went to the business men who carried an advertisement in the county paper and got them to insert in his advertisement an axiom about vaccinations, and banks agreed to ask every man who came to their banks to borrow money whether or not they had had their family protected against typhoid fever by being vaccinated.

For an introduction to the discussion or study of methods I have divided into two parts:

I.—EDUCATIONAL

In order to get a larger percentage of the people vaccinated we should at all times keep the people impressed with the importance and value of being vaccinated every two to three years and we cannot hope to accomplish this by just merely relying on our vaccination campaigns during the summer months, but we should push the educational program during the entire year, which can easily be done without loss of time or interfering with our regular itinerary. During our school work we come in contact with almost every family in the

county through the children, which affords a great opportunity to increase your percentage of vaccinations by getting the children interested. Educate the teachers so in turn they may be able to educate the children. At our public gatherings where we are making talks we should always make mention of the vaccines, what is being accomplished and give them the statistical data, also, this can be done through our county newspapers, when we give out an article on typhoid fever for publication the value of vaccine can be shown by giving the statistical data. In the communities where the people do not come out and take the advantage of the vaccines, and all counties have them, I have found that by getting the local physician and minister to help you work up an interest among the people and go and give a lecture along with your stereopticon pictures with your physician and minister to corroborate your statements, will bring about wonderful results. Another very important educational feature is to demonstrate to the people during the county fairs by arranging for some of the school children to be on hand and vaccinate for typhoid, diphtheria and smallpox, this has a very desired effect on those people whose fear of pain and their ignorance as to the type of operation employed in the procedure of vaccinating has held them back.

So your educational features of your vaccination program may be summed up under these headings:

a. Schools.
b. Public gatherings.
c. County newspapers.
d. Stereopticon pictures.
e. Demonstrations at the county fairs.
f. Teachers.

II.—PUBLICITY

Do not take it for granted that all the people will hear about your vaccination campaign and remember that it is up to you to get every person the word, notifying them of the different dispensary points in the county with the date of the month, the day of week and hour that you or some member of your staff will be at each point. It has always been a difficult task for me to advertise or give publicity to my vaccination campaigns so that every individual gets the word. A number of people always come to me after or during the campaign lamenting over the fact that they did not hear about the date for the vaccinations in time. It has been my policy in the past in giving publicity to the campaigns to write personal letters with conferences with some of the influential citizens of each township in the county, seeking their co-operation, distributing posters, size 9x12, giving the different dispensary points, with date of month, day of week and hour that we would be at each point, this also is carried in the newspapers of the county for two or three issues. Another valuable method of giving publicity to the campaign is to get the support of the ministers and Sunday School superintendents of the county, having them to make announcements as to the campaign.

I want to leave this thought with you, place all the responsibility possible upon the people. For instance, go into a community, get some of the influential and interested citizens to get a number of people, twenty-five to fifty, to be vaccinated, telling them that you will come and vaccinate free. You will find that your number of requests to come and vaccinate will increase rapidly.

DISCUSSION

Dr. J. S. Mitchener: The best salesman, to whom Dr. Williams referred, is the family doctor. I believe that if the health officers could get the physicians, each in his own community, to give the vaccines, they would give a great deal more. The results last year in the counties with part time health officers showed that the physicians gave lots more vaccines than if we sent in a man. Dr. Nance, of Union County, told me that, with incomplete returns, they had 9,000 complete typhoid vaccinations in Union, and about 1,000 toxin-antitoxin. We shall have to go far to [illegible] that. If we can carry out the idea of having the family doctors give the vaccines, we shall do a great deal.

Dr. C. V. Reynolds, Asheville: This question of vaccination, to my mind, is a serious one, and it deserves serious thought. Educational propaganda is too long drawn out. When we think of 23,000 to 25,000 deaths from diphtheria, which means a morbidity of 250,000, and about the same from typhoid fever, it is a serious proposition. It is too serious to go along and have a spasmodic vaccination. I believe that the science of medicine has advanced too fast for the laity to keep pace. We are not going to get it from the laity, notwithstanding the fact that they are today willing to receive it, for I do not believe they know how. I do not believe we shall get it from the general practitioner, for he is asleep at the switch. They do not go out and advise their clientele to do what they should do. They wait for the people to come and ask for it, and then they administer it willingly. Get the children when they enter school. As they come in, inoculate them against these three things: diphtheria, smallpox, and typhoid and paratyphoid—do that as a routine. I have tried the first step, and we have eradicated smallpox from our midst. You can not find, in the 7,000 students attending our schools, a single individual who is not vaccinated against smallpox. The people are aroused and enthusiastic, and are applying the same law to the vaccination of school children against diphtheria and typhoid fever, making it necessary before entering school. If you can get the people aroused to the point where they are willing to have that done, and are anxious for it, you will really accomplish something.

Dr. G. B. Nance, Monroe: I think that the first great point is to get the people to have confidence in you and make them believe you are in earnest about the matter, and that you have faith yourself in what you say.

We had a campaign about three years ago and vaccinated about 3,000 during the summer, and since then we have been doing it also, so I suppose about 5,000 have been vaccinated. Since our campaign three years ago I have called the attention of the people of the county to the fact that since then we have had very little typhoid. I also said through the paper that we would give the vaccination ourselves, that they would not have some strange physician whom they had never seen before, but each could go to the family physician and have the vaccine given. I succeeded in getting the hearty co-operation of all the physicians of the county, and during the month of March I authorized all of the physicians of the county to give the vaccine at any time when any one came, and then I made appointments for various places in the county and had a man meet the appointments. I have not all the returns yet, but I have seven thousand complete returns with three physicians to hear from yet, which will give at least 8,000. In the diphtheria toxin-antitoxin treatment I have about 800 complete returns already, with three physicians yet to be heard from. The people knew nothing about the toxin-antitoxin until last year, and in order to educate them I put on a small campaign on my own responsibility, and vaccinated about 184 children. In all, we have given it to somewhat over 1,000.

Dr. J. A. Morris, Oxford: It is the tradition of the doctor to be sought, and not to go out seeking patients. That is his thought habit, and until we can educate the physicians out of that attitude I do not believe that we can blame them very much for not co-operating with us more. They simply do not realize that it is their duty to go seeking people. I believe that explains their apparent apathy. It is not apathy, but it is a thought habit, a custom.

PUBLIC HEALTH AND PUBLIC WELFARE CORRELATED IN COUNTY WORK

Samuel E. Leonard
Supt. of Public Welfare, Wilson County

Speaking for the welfare department in general I wish to thank you, the Public Health Association, for your courtesy in your recognition of Public Welfare and for this place on your program. Public Welfare in North Carolina is less than three years old while Public Health is many years its senior. Social legislation of the present day, though far behind the needs of the time, is the outgrowth of other movements on social work such as yours. It was quite natural for Public Health to come first because life and death, sickness and accident, are more impressive on the minds of the majority of our people than the raising of social standards. Public Welfare is not a spectacular thing, does not cater to the big head-lines and hence is harder to put across. But the health officers have been our champions and have done much to make the work a success.

I wish just here to lay down this fundamental in social work: Public Welfare deals with the abnormal, not the normal. Let me name the duties of the welfare officer as outlined in the statute which is but a suggestion of the manifold duties he is called on to perform:

(a) To have, under the control of the county commissioners the care and supervision of the poor, and to administer the poor funds.

(b) Under the direction of the State board, to look after and keep up with the condition of persons discharged from hospitals for the insane and from other State institutions.

(c) To have oversight of prisoners in the county on parole from penitentiaries, reformatories, and all parole prisoners in the county.

(d) To have oversight of delinquent and dependent children, and especially those on parole or probation.

(e) To have oversight of all prisoners in the county on probation.

(f) To promote wholesome recreation in the county and to enforce such laws as regulate commercial amusement.

(g) Under the direction of the State board, to have oversight over dependent children placed in the county by the State board.

(h) To assist the State board in finding employment for the unemployed.

(i) To investigate into the cause of distress, under the direction of the State board, and to make such other investigations in the interest of social welfare as the State board may direct.

Can you think of normal persons applying to the county for $2.00 a month or for shelter in the county home? Are people discharged from an insane hospital normal, if so why should they be kept up with? Are paroled prisoners and delinquent and dependent children normal? No, we are dealing with abnormal folk and abnormal situations. These abnormalities are both mental and physical. To diagnose the case we need a double-barreled man, one who can see with two sets of eyes. We have such men, one in this State, the psychiatrist, but they are far too few. But the psychiatrist is first of all an M. D. He must be this, for the physical and the mental are so closely connected. Now the welfare officer is not a trained psychologist every time, but with his experience in handling situations, and his study, with the opportunity of calling in the State expert on special cases, he should be able to diagnose the mental situation. Now with the proper co-ordination, the welfare officer and the health officer should make the necessary combination to put over a successful social program in a county.

I was interested in looking over the programs of the nineteen public health institutes being conducted in as many cities of the country by the United States Health Service co-operating with the State Boards of Health, one of which is this week being held in Spokane, Washington. 281 lectures, or more that one third of all the lectures given in these institutes are closely linked up with Public Welfare. There are such general subjects as child hygiene, mental hygiene, medical social work, protective social work, and the delinquent. All these

subjects under more specific headings are being discussed by the leading men in the medical profession. This means that men higher up have seen the vision and that Public Health men who like welfare men are public servants, and who, by virtue of their position must necessarily deal with social problems, are being instructed along social lines. The welfare officer is absolutely dependent on the health officer, for he within himself cannot handle both phases of the social problem. The health officer with the social training is a good combination within himself. He is in position to handle a few individual cases but the field is so large and the work so complex that the workers, both social and medical, must be materially increased if the work is to be adequately done.

In order to see how entirely dependent the welfare officer is on the health officer and how the work overlaps let us see some of the general problems which must come up in every county where there is both a health officer and a welfare officer.

A child is to be sent to an orphanage or the Children's Home Society. The health officer gives the examination.

A prostitute woman is placed in the court by the welfare officer. The health officer takes a Wasserman, makes recommendations and possibly treats the woman in prison.

Compulsory school attendance is in the hands of the welfare superintendent. Vaccinations, medical examinations and all health work are in the hands of the health officer.

A bed ridden man is placed in the county home by the welfare officer. He is a patient of the health officer as long as he lives.

The welfare officer has the oversight of prisoners in the county yet when sickness and accident come along the health officer is called in.

An insane person is confined awaiting transfer to the State institution. The health officer must examine the patient both physically and mentally.

A girl is committed to Samarcand or a boy to the Jackson Training School. The health officer must first pass upon the case.

This list could be continued because as I have said all social problems are concerned with the physical and mental make-up of the case.

To show some specific health problems that have been handled by welfare officers I cite the following: All these counties except one have no whole time health officer.

In Pasquotank County, the welfare superintendent, a capable woman, is taking a great deal of interest in the health of school children. She has been instrumental in getting a milk kitchen established for the undernourished children and more than a hundred children of the poor class are given a pint of milk a day, the result being a two to five pound gain in each child during the first month.

Rutherford County Superintendent of Welfare has put on a typhoid vaccination campaign in co-operation with the State department of Health and 5,500 people were vaccinated. A tonsil and adenoid clinic has been held and 75 children have been operated on,

a dental clinic and 900 children had teeth filled, while 1,100 children were examined by the State Health Nurse.

Way down in Dare County, the county of islands, the Superintendent of Public Instruction who is also welfare officer, a woman by the way, has interested the State Board of Health and nurses have been sent to examine the school children. A clinic is planned for the early summer.

In Haywood, a small mountain county, the welfare officer has taken advantage of nature herself and has put in a sanitary system of piping water from the mountain sides to the school houses where sanitary drinking fountains have been installed. Dr. Cooper has operated on 125 of his school children and 1,000 have been treated with dental work. The welfare officer has had a five day tuberculosis clinic and of the 81 examined the doctor found 13 positive cases. There is no whole time health officer or nurse in the county so the welfare officer has been instrumental in getting much done.

Over in Rowan County we have a woman who has done a big work for crippled children. She has interested outside agencies to the extent of hundreds of dollars and has placed many "Tiny Tims" on their feet.

I mention these few cases, varied in character, to show the interest the welfare officer has in the health of the county. The same thing could be said about the social work the health officers are doing.

I have been interested in a comparative way in the Public Health plan of having a standard of charge for service rendered, representing the cost, by means of which a financial record may be kept. I understand it was hard to work out. If the dollars and cents method in Public Health work has been hard to work out it is next to impossible in social work. You men were originally trained for a certain job, that of diagnosing physical ills and applying remedies therefor. Most of you have done some practical work before going into this most altruistic work of keeping communities well. You fixed a price for a specific job. Now you apply the price. But Public Health is more than that. It is so much more that you, every one of you, find yourselves working about half your time on kinds of work that you cannot put on your "charge sheet." Public welfare officers are working all the time on such work. Then too, there has never been any price fixed on social work. But whether the community knows it or not it is paying heavily every time it neglects its social needs.

The war has taught us many lessons and I suppose we will be drawing on the experience for years to come. We have heard a great deal about the physical unfitness of the men. But we have heard less about the mental and nervous diseases which after all are the barometer of the mental stability of a nation. This is a national problem of momentous importance and it receives only scant consideration. There are only a very few medical schools in the country which make a pretense of adequate instruction in neurology and psychiatry. We build State and National institutions and lock up in them in excess of capacity those who cannot live in society with safety to themselves

or others, but we do not study the causes, nor do we strive to control and prevent what is susceptible of substantial control and prevention.

But the psychiatrists and neurologists, although few in number, did a big work with the army men in classification. Of the 69,394 men who were fully classified up to May 1, 1919, 63% were clearly social-ological problems while the remaining 37% were classified as medical, such as psychoses, epilepsy, organic nervous diseases, and glandular disorders. But the 63%, consisting of neurotics, drug and alcohol addicts, psycopaths, and feeble-minded, while being medical problems, are more. They are social problems that cause concern in every community. What to do with them is a question in the mind of every social worker, every health officer, every judge, and all officers whether State or Federal. It is a problem of health, yes, but it is more. The morale of the country is lowered by their presence. Doctors must carry their part of the load and social workers on the other hand have their part to bear. Both must work together to remedy the situation and crystallize public sentiment to bring about the necessary legislation.

The institutions of the State are full with long waiting lists while county prisons house men and women awaiting berths in the State institutions. Some of these until very recently were chained to the floor and had been for years. And even in our State institutions the inmates are not and cannot be properly classified. The insane department of our State penitentiary has recently been publicly spoken of as a terrible disgrace to our proud State. The superintendent himself is much more disturbed about it than we are. There are children in our schools who ought to be in Dr. McNairy's school and there are people in his school who ought to be elsewhere. These children are holding back the normal boys and girls who ought to be pushing ahead. These boys and girls are our juvenile delinquents, later our adult offenders. Large families come of this stock and thus feeble-mindedness is propagated.

In 1918 a special committee was appointed by the New York Commission of Prisons to investigate the matter of mental disease and delinquency. The following facts were found:

In State prisons	25 %	feeble-minded
In reformatories	26.5%	" "
In penitentiaries and workhouses	33.5%	" "

A survey is now being made of the county homes of our State and it looks as though 75% will be found mentally defective.

But we are coming into a new day in this form of social work. Those of you who have read "The Winning Fight Against Mental Disease," by Burdette G. Lewis in the April *Review of Reviews* are familiar with what is being done in New Jersey. Experiments on a smaller scale have been made in other sections of the country and the results are so significant that I verily believe that we are standing on the threshold of a new system in the dealing with mental disorders.

We shudder at the guillotine, the dungeons, and the instruments of torture of the old France and wonder how a population could be content and tolerate such brutality. Might it not be possible that the years will come when the people will look with horror on our present treatment of our mentally sick? We send to the insane hospital, yea asylum, for they are rightly called that, a man or woman out of our community and in a few years we forget that the person ever lived. There the person is confined year in and year out. What would happen to a normal person under those circumstances? If the entire population of voters could take one look into our jails, "poor-houses," road camps, and our State institutions for prisoners and the mentally sick there would a cry go out the like of which has never been heard in this Old North State. But the heads of the institutions are not to be censured for this condition and this indictment is not being brought against them. They deserve commendation for the work they have done under the circumstances. They have been miserably handicapped for lack of funds. They have been crowded beyond capacity and with a population unclassified, among which were many persons not intended for the particular institution. But the social service and the health association, together with the many allied agencies are gradually eliminating these disgraces, slowly but surely. Working with insufficient funds and with scant personnel and fighting the ever-present cry of high taxes, the Old North State is being recognized over the country as doing some pioneer work.

Let us see what the possibilities are as taken from the New Jersey experiment.

"As a result of the treatment provided during the last three years, 1,000 patients classified in the so-called 'incurable' group have been discharged. In the last year 25 of this number have been re-admitted, but eight of these have been discharged after the previous inadequate treatment was completed. The discharged rate for the functional group has averaged 65% to 70% of the admissions for three years as against a ten year average of only 37%."

If the tax-payers could only realize that $10,000 is a conservative estimate of the per capita cost of an inmate shut up in an institution for life to say nothing about the suffering of the patient and the loss to the community of a citizen when 70% of these same persons could be returned to their communities they would feel different toward the spending of money on such institutions. It would mean a tremendous saving instead of an extravagant expenditure. Think of an institution for the so-called insane with no strong rooms, no straight jackets, no manacles of any kind, but instead, wards flooded with sunlight, with white beds, with nurses in white just like the regular hospitals we are familiar with. And why not? These people are sick, mentally sick, and they need the kindliest of kind treatment while the re-adjustments are going on. Hear this paragraph from Dr. Cotton's book, "The Defective Delinquent and Insane."

"Even today at least 80% of all hospitals for the insane throughout the country continue, to their own shame and to the detriment of the

patients, to employ mechanical restraint. There is no necessity for it as the writer can testify from personal experience. When he took charge of the State Hospital at Trenton in 1907 he found over 90 women in straight jackets, and all other forms of restraint were in daily use. In less than two months over 700 pieces of restraint apparatus were removed from the wards and since that time no patient has been put in restraint of any kind."

Of what does the treatment consist? Possibly the extraction of an infected molar as is cited in one case. 80% of the patients have bad tonsils and they are removed. Many times stomach and intestinal disorders must be made right by the surgeon's knife. The operation may be very simple or dangerously complex. Sometimes one operation will stay the mental delusions temporarily then later another operation will be necessary. Whether the theory of Dr. Cotton and Dr. Anderson that all mental troubles come from physical ills is correct or not, they have reduced the average stay of curables at the hospital from nine to three months.

I cite this wonderful piece of work to show the possibility of handling this menace of problems in a scientific way and thereby in a successful way. It will cost money, yes lots of money, but it pays because it is economical in the long run. It is not only economical but it is beneficial to the patient, to the patient's family, to the community and to society in general. A big part of our social problems would be solved if we could put this plan on in North Carolina. Public Health officials and social service workers must because of their position lead in the work. Those closely connected with the institutions will join us and the public will soon follow if the program is definite.

We need a clearing house first of all where every man or woman convicted in any court must first go for classification. Experts would be there to give thorough physical and mental examinations after which the sentence to the proper institution could be made. There could be different classifications in the same institution but the prisoner would be placed where he could develop best physically and mentally. And why not? We do not want a wreck of a man unfit for his family or society turned loose upon the public. He would then be a subject for another institution. A man's mental and physical health should be conserved and not abused while he is a prisoner.

Possibly this same clearing house, or the same experts, could be used for our mental defectives, and our present State institutions be used under a different system of classification controlled by the clearing house. Under this plan instead of having long waiting lists because of lack of room there would be more room because of the large number of discharges.

I believe these things are possible, not next year but within our generation. Our governor has shown great interest in our institutions and progress is already being made. We must help do the job.

I thank you.

DISCUSSION

Dr. L. B. McBrayer: I am not exactly familiar with the new constitution and by-laws of this Association, but if it is in order I

move that all of the county welfare officers and the State welfare officer be invited to become members. I like the exhibit we have had.

Dr. C. B. McNairy, Kinston: The welfare workers are my best friends and co-laborers in North Carolina. I could talk all afternoon on the mentally sick and irresponsible, their care and treatment, though I can't say that it would be interesting or instructive.

It gives me pleasure to say that we are now prepared to co-operate with the welfare and health officers in trying to establish the degree of mentality and the degree of responsibility of the mentally affected in North Carolina. I am pleased to announce that I have now, as my assistant, a gentleman who has had quite a good deal of experience and intensive training, and who will I am sure, do a great work in North Carolina. We shall have a clinic, and we will gladly give a day, or part of a day, each week, when we will receive at our institution, by appointment only, children whose mentality is in doubt. We will study and pass upon them, and give you a report of our findings, if desired.

MILK INSPECTION FROM A PRACTICAL VIEWPOINT

J. H. Heald, Winston-Salem

In endeavoring to present to you my ideas on the subject of "Milk Inspection from a Practical Viewpoint." I realize that I may depart somewhat from several points which many men consider essential to the production of a good grade of milk. I confess that fifteen years ago, my ideas were not what they are now. In those days, I was inclined to think that all milk of a lesser grade than "Certified," produced under the ideal conditions which surround the productions of "Certified Milk," was in a class with bichloride or cyanide. Yet, today, we have in Winston-Salem no "Certified Milk," but we do have what I consider to be a very high grade, low count, reasonably safe milk supply. Our baby death rate from colitis and other intestinal diarrheas is constantly growing less—due partly at least to our improved milk supply.

It is my opinion that we health people have, in many instances by arbitrary insistance upon non-essential requirements, discouraged the production of perfectly good milk, antagonized the farmers, and made many unnecessary enemies.

We are trying in our work here, to boil down our requirements to those that we consider have an actual influence on the quality of our milk. As a result we have more than doubled our producers, yet we believe each is equipped with the essential factors for producing clean milk. In addition we feel we have that very valuable factor—the goodwill and co-operation of our men.

What are our minimum requirements?

(1) A lean-to or a portion of the stable partitioned off and equipped with a cement floor and gutter to which the cows may be brought for milking.

(2) A milk house separate and apart from the kitchen to which milk may be brought for cooling, bottling and storing. This milk house must also have a well-drained cement floor, and is generally built in two rooms—one for the dirty work, the other for handling the milk itself. It is, of course, well screened during the fly season and every effort is made to exclude flies.

(3) Small top milk pails are required.

(4) A Champion or other satisfactory type of cooler and ærator.

(5) A tank of 25 to 40 gallons capacity under which a fire may be built for providing hot water for washing and scalding.

(6) A refrigerator box of sufficient size to hold an ample supply of ice.

Roughly speaking, these are our equipment requirements. Of course, some of the men fix up much more elaborately than others, and we always assure them that any extra flourishes do not hurt our feelings in the slightest. I much prefer to have them spend this extra money on their own initiative rather than under compulsion; and it is surprising how many men will spend more than is absolutely necessary if they feel they are doing so of their own free will. Then there are others who, when they begin to get good results, take such a pride in their product that they want their outfit to be in keeping with this product.

Next comes *METHODS*, and under this head we require roughly as follows:

(1) Brushing the cow and washing of the bag and teats just before milking.

(2) Clean, dry hands.

(3) Early removal of milk from the stable to the milk house.

(4) Prompt cooling and æration.

(5) Immediate bottling.

(6) Adequate refrigeration.

(7) Thorough cleaning and scalding of all pails, cans, strainers, bottles, etc.

In addition to equipment and methods as described above, we require the annual tuberculin testing of all cows supplying milk, cream or buttermilk to the city. At present the county is doing this work free of charge—a method which we heartily approve of.

I have long been of the opinion that the eradication of tuberculosis in cattle should be considered an economic dairy problem rather than

a health department problem. It has undoubtedly been on account of the indifference of the cattle industry toward cleaning up its herds that health departments have been forced to take action. This method touches only those cows that supply a particular city and leaves untested by far the large majority of the cows in that county. For example, until the Forsyth County Commissioners took up this work, we tested only 2,500 out of the probable 10,000 cows in the county.

In connection with pasteurized milk which constitutes over half of our total supply, we require the usual standards of heating to 142 degrees to 145 degrees for 30 minutes, immediately cooling to below 50 degrees and storage below 50 degrees until delivery. No exception is made as to T.B. testing.

Samples are taken at least twice monthly, examined for fat, solids, specific gravity, and bacteria per c.c. At the end of each month, an average of all samples for each man is determined, listed, and a copy of all results mailed to each man. This stimulates interest and competition. We do not publish results in the paper, but any man's rating is freely given to any inquirer. An average grade is figured on a six months basis, and a new man must have at least three months of laboratory analysis before we will give him a grade. It takes me at least that long to be satisfied as to what a man can and will do.

Because of the small number of dairies engaged in retailing milk (27 in all) I do not find it necessary to depend very strongly on the score card of the Dairy Division. The score card is undoubtedly of great help to a field inspector who must supervise and be able to recall the details of a large number of dairies, but for the number of dairies supplying a community of this size, I find it of little assistance. Then, again, as our knowledge of those factors which actually influence the quality of milk increases, we find many apparent inconsistencies between laboratory results and dairy conditions as shown up by the score card which are sometimes embarrassing to explain. I refer to such items as number square feet of lighting surface, number cubic feet of air space per cow, number of feet between manure pile and cow barn, and several other points.

Another point which I wish to emphasize as essential to successful inspection is the securing of goodwill and trust of the dairymen. I make it a strong point to convince my men that the laboratory and its findings are of as much benefit to them as to the consumer. I always try to find the explanation of an abnormal fat test or a high bacteria count, by asking questions and encouraging frank answers, even though they may convict that person of some easily avoidable carelessness. When a man has enough confidence in my fairness to furnish his own answer to his own question of "Why did I have that high count last week," I feel that he has a right conception of the relationship that should exist between himself and the inspector. An explained mistake generally will not occur twice. Occasionally I have one who declares that nothing out of the ordinary occurred to cause the trouble, but I am glad to say such answers are getting rarer.

Another way to obtain the confidence of your men is to require exactly the same minimum standards from one as from another.

Don't allow any special privileges or concessions to anybody. It's a little hard at first to say "No," but soon they will not expect a "Yes," and will be prepared to meet your requirements. Special privileges are the hardest things in the world to explain to the other fellow.

In closing let me say that while I recognize that perfection should be our ideal, yet the fact remains that by far the larger majority of our farmers are not, and probably never will be, in a position to realize this ideal. It is the practical milk inspector's problem *today* to get good, pure, safe milk from the dairies of today, and with the minimum amount of equipment and expense. He must help the farmers to preserve what little profit he is making, yet at the same time protect the health of the consumer.

That we can procure a high quality of milk that compares very favorably with the output of our most elaborate dairies, is being proven to my complete satisfaction. How do we accomplish this? By installing the minimum amount of essential equipment, and bearing down hard on methods.

As a result of our system in Winston-Salem the following figures are of interest:

From January to July, 1920, there were 0 producers who averaged under 10,000 per c.c.

From July to January, 1920, there was 1 producer who averaged under 10,000 per c.c.

From January to July, 1921, there were 4 producers who averaged under 10,000 per c.c.

From July to January, 1921, there were 8 producers who averaged under 10,000 per c.c.

Our average yearly bacteria counts of all milk were as follows:

1917	254,000
1918	112,000
1919	99,600
1920	45,600
1921	29,300

By laying special stress this year upon icing both at the dairy and on the delivery trucks we hope to excel our 1921 record.

It is my suggestion to those of you who are, or may later become, interested in milk inspection work to see that your inspectors get down to brass tacks, that they ask only what is necessary, that they eliminate everything that unnecessarily irritates dairymen, that they gain the dairyman's confidence and work with him using the police court only as a last resort.

DISCUSSION

Dr. J. H. Hamilton, Wilmington: I think that we need to emphasize the importance of clean milk as a health problem, and I fear that some of our health officers have been a little negligent in the super-

vision of the milk supply. It is one of the fundamentals, and I do not believe that we should wander too far into the fanciful fields of State medicine without caring for the fundamentals. In our city we have Grade A, Grade B, and Grade C. The grade depends upon the equipment, the methods, and the bacterial count. We expected to get one or two in Grade A, but we got eight. The moment the plan was announced they began coming around to the office to learn what they should do to improve the grade. They are getting new equipment, new sterilizers, and improving their methods in every way. I think that it is entirely possible to get the co-operation of the dairymen.

Dr. L. B. McBrayer: I do not think that we ought to let this occasion go by without expressing our appreciation of the wonderful results obtained by the Health Department of the city of Winston-Salem in the great reduction obtained in the bacterial count. It used to be that I did not drink any milk outside of Asheville, but I am convinced, from the report made, that it is perfectly safe to drink milk in Winston-Salem.

The matter of clean milk is a matter of very great importance, especially for children. When we first began to talk about clean milk Dr. W. A. Evans, then health officer of Chicago, who led the way in this particular thing, figured up how many carloads of cow manure the people of Chicago were drinking every year, and he had the goods there to prove it. We do not think of those things so often, but we do think of them oftener than we used to, and when we get a good live health officer like Dr. Carlton, and he gets a good live milk inspector like the essayist, we have good results. I want to congratulate the essayist and the Health Department, and I also want to congratulate the people of the city of Winston-Salem upon having the judgment to support a good live health department.

Dr. J. Howell Way: I want to thoroughly indorse the words of commendation upon the improvement made in this particular city of Winston-Salem, and not only in this particular city but also in other cities and in the rural districts of the State. But while we are doing that, I want to remind you that there is not enough milk consumed in North Carolina. Reference was made this morning to the fact that many farmers do not have milk the year around on their tables. Now, farmers are not peculiar in that. The average family of North Carolina does not have enough milk. Only a day or two since I heard a doctor say, 'I can not take milk; it is perfect poison to me.'' I said to him, ''Now, Doctor, don't let anybody hear you say that. Or, if you do let anybody hear you say it, tell them that you have 'gone back on your raising' and have an abnormal and diseased stomach.'' Milk is the ideal food certainly for the first year of life, and our profession have not been doing our full duty—not by the dairymen, but by our profession and by our constituents. Our wise governor has recently concerned himself in regard to food, and particularly in regard to vegetable food. While I am standing here, I want to state that it is the duty of the average doctor of North Carolina to stress the value

of greater variety of food, greater variety of vegetable matter, and also a greater quantity of milk. This thing in North Carolina, in the average family in the rural districts, of the little children learning to drink coffee instead of continuing to drink milk, is radically and fundamentally wrong, and if every doctor would raise his voice against the drinking of coffee, tea, and narcotics, by little children especially, now that we are having good milk made more plentiful, we would be advancing the cause of health and would raise the physical standards among the children of North Carolina. It is the duty of every one, but especially of the doctors, because they come closer to saying what they shall eat and what they shall be than any other class.

SECURING THE CO-OPERATION OF STATE AND COUNTY OFFICIALS AND OTHER ORGANIZATIONS

B. A. Olds, M. D., Henderson
Health Officer, Vance County

The very natural answer of how to secure co-operation of State and county officials and other organizations is to *offer co-operation.*

The very first essential is to get on a *fact basis.* My experience so far, leads me to believe that most county officials and other organizations concerned are far from being on a fact basis as regards this great movement of which we are the sponsors, or anything that has to do with it. Numerous times have I had the question asked me, what do you do, what is the nature of your work, tell me about it! The very first thing that a Health Officer should do is to show the public why his department exists. Although that sounds fairly simple, I doubt whether many Health Officers have ever formulated to their respective counties the real purpose of a health unit. Health work is established as an agency for the performance of services of a character which the citizenship can render better collectively than as individuals. There are, as little as you may have thought about it, two distinct branches of any organized health unit; one is legislative, or policy forming body, your county commissioners and others to whom you may have to look for support in whatever nature it may be. This policy forming body consists of persons chosen directly by the citizens to express the sentiments and policies of those who elected them. Therefore in order to secure the co-operation of county officials and other organizations, it is clearly seen that we must first secure the co-operation of the public at large. How may we do this? I agree with you in the assumption that it is a great task! The Health Officer who makes his work a success is a personage in his city! He ought to live up to the *expectation* of the public, and to do that will require every resource of body and mind that he possesses. I, while a health officer, have found it necessary to attend gatherings where public matters were to be considered, and getting acquainted with the men of the city and county. One hundred speeches in a year, outside of office hours and other work is no more than other men have done;

the attending of various meetings over your county, woman's clubs, no matter how small they may be, speaking at every opportunity, talking public health at every opportunity, and combining with the above, as best you can, a personality pleasing to all, will secure for you inestimable co-operation in your work. And further, have you ever stopped to consider just how much the opinion that your school children have of you—bears on the securing of this co-operation? Are you one of these gruff sort of fellows who "makes" them do things, or are you one of the kind who loves them all and who uses that higher power of persuasion? Do you stop to consider that the boy and the girl of today will be the man and the woman of tomorrow, and that some of them will follow directly in your footsteps? So then, let us all try hard to get these boys and girls "for us," rather than "afraid of us." Then let it be clear to all that this "policy forming body" with which we deal primarily is developed from the child up. On what we do now, depends to a large degree the future of this great work in which we are engaged.

And the other division of a Health Unit is the Administrative; this is you, and those working with you in your respective counties. This is the branch which carries out the policies which the legislative body have decided upon. It is that side of the health unit with which I will deal especially; co-operation with the policy forming body is secured chiefly through *argument*, and again, the *presentation of facts*. Further, it is secured through moral and professional influence and a direct finger tip knowledge of the existing conditions. And still further, I may say, by the granting of such requests as are within reason; such as intelligent and prompt reports. Several times since I began my administration in Vance County there have come to me letters from our officials in Raleigh complaining that several of our health officers have failed to properly fill out reports, or that they have neglected sending in reports of matters of importance. Let us remember that our State Department is the hand from which we are fed; that it is the mecca for us in time of trouble; that it is the mill where matters are carefully weighed, and that it is, after all, the base of this great project of co-operation. Were it not for these State Departments, what could we accomplish? What would we do for our clinic directors of various kinds; our statistics, and numerous other things without which we could barely exist? So then, I appeal to you individually, to look first through the "telescope" of our own State Board of Health, and through it you will see a co-operation unsurpassed anywhere.

Now, while all the above points are, if practiced, of great value in securing the co-operation of State and county officials and other organizations, the Health Officer must catch that "Vision of Community leadership." He must have in him that desire to achieve something to make his work a *reality* rather than a *mere possibility!* It was Thomas Carlyle who said, "Think of living! Thy life, wert thou the most pitiful of all the sons of earth, is not an idle dream, but a solemn reality!" We are not placed in this world to occupy space alone, nor to merely dream, nor to plan alone, *but to make things real,*

to achieve something! So then, we must catch that vision of community leadership. Right here I am reminded of a story I once heard about a certain little girl who attended church with her father, and this father has not only caught the vision of community leadership but has learned the lesson that was taught to the eminent divine by his little daughter. The story goes that a very eminent clergyman went into a little New England village to spend a vacation. In this little village there was a church that had no regular minister and depended upon opportunities such as the clergyman in the village offered. A committee of deacons waited upon him and besought him to preach on the following Sunday. He agreed to do so. He came to the church accompanied by his little daughter. This youngster, being a minister's daughter, was well trained, and her sharp eyes noticed the fact that during the service there was no *offertory* and no collection taken up. As soon as the sermon was over and her father came down from the pulpit she was at his side tugging at his coat and whispering to him the awful news, "Papa, they forgot to take up the collection." The preacher quieted her and assured her that there was some good reason for it. After a little while they were passing out of the church and by the door the preacher noticed a box marked: "Free Will Offering." He directed his little daughter's attention to this, explaining to her that in this church they let the people drop their offerings into this box as they went out instead of taking up a collection in the pews. To illustrate his explanation, he put his hand in his pocket and taking out a half dollar dropped it into the box. A moment or so later the chairman of the committee of deacons appeared on the scene and thanked the minister most earnestly for his kindness in delivering the sermon of the morning and remarked to him, "By the way, doctor, it is the custom to give to the preacher the 'Free Will Offering' of the morning," and saying that he unlocked the box, took out the minister's half dollar and gave it to him. Almost immediately the little daughter was again pulling at papa's coat, and as he turned to her, she quietly remarked, "If you had put more in, papa, you would have gotten more out, wouldn't you?" And this is the lesson that we should all as health officers learn, *the more we put in the more we get out; the more we co-operate the more co-operation we will get; the harder we work, the better will be the results we will obtain.* The great motto of Rotary, we should borrow: "*He profits most who serves best.*" Business is business, is the old saying, now it is, business is service, business is co-operation: So health is service, results are co-operation.

And now, how may we apply all these principles to our own individual counties? This can be easily done. First, have some *system* about your work. Know what you are going to do next and plan for it, then let your people know about it and *solicit* their co-operation! Present your plans to your State Board of Health for criticism or correction. Then when they say yea, present them to your county commissioners and tell them why you are doing this or that and what benefit will be derived. If you want a dental clinic, so put it to your people in a way that they will see the necessity for it; if you want a

venereal disease campaign, cite to them the dreadful complications of venereal infections, and show them, if practical, some cases. If you want co-operation from the teachers and school superintendents of your county, take them down and tell them why you want it; they won't turn you down. If you want sanitation in your county, show the people just why it is necessary, and in whatever else you might want to get, first show your people why and then when they give you a chance, make good, get results, *finish the job.* Doubtless the greatest reason for so-called utter failure on the part of many of us is the fact that when we are given a chance to do a thing, we let it lag after a time. *We don't finish the job!*

And so then, we may summarize by saying that the *presentation of facts, living up to the expectation of the public, argument, pursuasive argument, moral and professional influence, a direct finger tip knowledge of existing conditions,* the catching of the *vision of communtiy leadership, making things real rather than merely possible,* the complete realization of the fact that the more you put in the more you will get out, "He profits most who serves best," *system,* the *why* of your work, the *publication of your results, and prompt correct reports* will secure for you in most instances unlimited co-operation on the part of your State and county officials and other organizations.

And may I not finally state that I consider the present Cost Equivalent System of our own State Board one of the most efficient means for the presentation of our accomplishments to all really interested!

After all, Demonstrated Sincerity of Purpose and the Utilization of Common Sense will go a long way toward securing the Co-Operation with State and County Officials and Other Organizations.

THE RELATIONSHIP OF THE STATE DEPARTMENT TO THE COUNTY HEALTH DEPARTMENTS

E. F. Long, M. D., Raleigh

The fraternal relationship of the State Board of Health to the county health departments directly associated in the co-operative plan of work embraces a broad conception of mutual interests.

The 1917 Session of the Legislature provided an appropriation enabling the State Board to offer financial assistance to a limited number of counties in the development of public health activities. The International Health Board supplemented this fund with an appropriation to apply specifically to hookworm and sanitation work for the rural population. Nine counties took advantage of the opportunity afforded within the first year. Succeeding General Assemblies responded to the increased demand for extended service until twenty-five counties, representing 30 per cent of the total population of the State are included in the co-operative plan of public health work.

The Bureau of County Health Work was established in 1917 to serve as a distributing agency for the State Board and the co-operat-

ing county health departments. A majority of the co-operating counties take advantage of the opportunity afforded to receive funds from the various contributing agencies and disburse these funds as required to the counties.

The Bureau of County Health Work receives, tabulates and distributes monthly reports of activities of the counties. Vouchers, forms, report blanks and unlimited supplies of literature are furnished by the State Board, in addition to the direct and supplementary appropriations.

Paternalism and the exercise of central authority is sedulously avoided in the administration of the county units. The county health officer is a State official and represents the State Board's every interest in his county.

The State Board recognizes that the county health officer is in better position to interpret local conditions and entrusts the administration of general and local requirements to his judgment.

The uniform procedure of submitting every proposed additional unit or phase of work contemplated to the consideration of the individual and assembled health officers is an established custom of the State Board of Health. Each item of public health work in which the counties are generally engaged is carefully reviewed, first by a committee of health officers, and, later by a meeting of all the health officers of the co-operating counties.

After careful consideration, the State Board of Health proposed a plan to fix a financial value, expressed in terms of cost equivalents, for consideration of the co-operating county health officers. A committee of experienced health officers was selected and requested to consider the proposition in detail, and, if in their opinion the plan seemed feasible to select and fix a valuation on each item of established public health work. This committee completed its deliberations and presented a tentative program to a meeting composed of all the co-operating county health officers in June, 1921. Critical analysis of the proposed plan and careful consideration of each item valuation was invited. The State Board of Health offered additional compensation to the co-operating counties, based on the cost valuation the health officers placed on their work. A definite schedule of valuations was recommended by the health officers, adopted by the State Board of Health and made effective July 1, 1921. Standard record forms, definitions and report blanks were prepared in accordance with the schedule submitted. This arrangement enables each department to select any series or to include all items of public health work and receive the same relative rating and reimbursement. A spirit of friendly competition is aroused and the staff of each department is stimulated to renewed exertion. Initiative is developed and valuable items of public health work that might otherwise be overlooked or disregarded are eagerly included, frequently resulting in such rapid expansion of activities and the inevitable public demand for increased service that additional facilities long hoped for are being quickly realized.

DISCUSSION

Dr. P. J. Chester, Greenville: The first organization which we must recognize as a county unit is the board of county commissioners, because it is from them that we get our appropriations which enable us to carry on our work. It is up to the Health Officer to know every member of the board of commissioners personally. Until he does this, he has not started his health campaign. He should know them in such an intimate way that he can feel free to discuss problems pertaining to his department at any time. Before a health officer goes before his board of county commissioners with a request for the betterment of his department, he should first give the members of the board an opportunity to familiarize themselves with the problem that he is to place before them. If he does this he will have no trouble in presenting the request or problem in an intelligent manner, likewise the county commissioners will be able to carry on an intelligent discussion. In most cases his request will be granted if it is one that will benefit the entire county.

The county board of health is the second unit that should be considered. The health officer should know each member of this board and they should know him. If they know that he is efficient and capable they will always be ready to support him and back him up in all his undertakings.

The county superintendent of schools is the next most important man in the county, in my opinion, because it is through him that you get the co-operation of the teachers in the county. Until you are able to get the co-operation of the county superintendent you cannot get the co-operation of the teachers.

Next on the list is the county welfare officer. Last, but not least, the register of deeds, the clerk of court, the county judge, the county solicitor, the sheriff, and the chief of police in the various towns in your county are very important men from the standpoint of co-operation. There are numerous ways in which they can further the cause of your work and assist you in making it a success. Just a few days ago the chief of police came to me and said that if I would give him a list of the positive Wassermans who have failed to return for treatment he would assist me and see that they would come back and be treated.

Dr. S. E. Buchanan, Concord: I enjoyed Dr. Long's paper very much. I think that I can appreciate the value of the co-operation of the State Board of Health as much as any one. I went into a county that did not co-operate with the State Board of Health at all, and I had an uphill time. Then there is the matter of finance. The average member of the board of commissioners does not see the necessity for an appropriation. Under the co-operative plan they put up the money and you spend it. My experience has been such that I would not go back to the old plan under any circumstances. My association with the State Department has been very pleasant. Of course, there are

a good many reports, etc., but I do not mind them, provided that I can get a whack at the other man's report to see what he is doing. Since I got with the State Dr. Long comes to see me, and I get in touch with what the other man is doing, which I think is worth a great deal. We may find that we are omitting something and find that others are doing it, and if they can do it, so can we. As I said, I do not want to go back to the old status.

REPORT OF COMMITTEE ON PRENATAL CARE

Dr. J. Buren Sidbury, Chairman: The money under the Sheppard-Towner act will shortly be available to the Bureau of Maternity and Infancy of the State Board of Health. It is the idea of the President, and, I think, of this committee, that the committee will work in harmony with that Bureau, and it should accomplish a great deal, as they will have perfected their organization within a short time. We therefore recommend that the committee be continued.

The President: I shall ask Dr. Rankin to make a statement as to how the committee could work with the State Board of Health.

Dr. Rankin: I think a recommendation was made in the report that the Committee be continued. I would like to see a committee made up of representative officers from the Association, with the State Health Officer left out, because the committee should be appointed from this body to co-operate with the State Board of Health. I think it should be continued as the agency through which this Association can co-operate with the Bureau of Maternity and Infancy, and through which the Bureau can get suggestions to aid it in its work, but I think that some other person from the Association should be appointed in the place of the State Health Officer.

Motion to accept the report of the committee, and that the Committee be continued to co-operate with the Bureau of Maternity and Infancy in carrying out the provisions of the Sheppard-Towner bill. Seconded and carried.

COMMISSION ON MILK STANDARDS

FIRST REPORT OF THE COMMISSION ON MILK STANDARDS APPOINTED BY THE NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

The Commission appointed at your last meeting of the North Carolina Public Health Association, held at Pinehurst, has labored under a considerable handicap in preparing this report, due to the fact that it has not been possible for personal meeting of members composing the Commission; however, the data herein contained has been compiled from information furnished by various milk control workers

throughout the State together with certain research work conducted by the Chairman of the Commission over a period of seven years on one of the State's Municipal milk supplies. The Commission has spared no time or effort in arriving at its various conclusions in this all important subject, viz., "standardization of milk grading." Possibly there has been some mistakes, but we offer this report as a nucleus for the building of a standard system of milk grading that may be adopted by milk control officials throughout the State, subject to corrections and alterations by succeeding commissions.

In drafting this report the commission has taken no cognizance of any subject pertaining to milk grading other than that of "market milk." Pasteurization and pasteurized milk, as well as cream, skim milk, etc., have not been considered; this matter being held over for further investigation and research.

The commission is of the opinion that in the first place health authorities must ascertain that the chemical composition corresponds with established definitions of milk as food; but their more important duty is to prevent the transmission of disease. This means the prevention of the transmission by milk of typhoid fever, infant diarrhœa, septic throat infections, tuberculosis, scarlet fever, diphtheria and other infectious diseases. In the interest of milk consumers, public health authorities must take positive action to prevent the transmission of any of these diseases, in addition to their duty of preserving the food value of milk.

In view of the above facts, the commission offers a system of milk grading in the form of a score card which takes into consideration the three characteristics of milk, viz., chemical composition as pertaining to food value, general physical character as relates to preservation, foreign matter and palitability, and sanitary index. The commission has assigned the following values to the seven items appearing on the card as follows: Bacteria 40, Flavor and odor 15, Visible dirt 10, Fat 10, Solids not fat 10, Temperature 10, and Bottle and cap 5, making a total of 100 points. Condensing these figures, we find that the three main characteristics are valued as follows: Sanitary index 40, Physical character 40, and Food value 20.

The commission has adopted the following scale by which each sample is to be measured and assigned its value:

N. C. PUBLIC HEALTH ASSOCIATION

Score Card for Milk

PLACE OF COLLECTION SAMPLE NO._____

TIME_____ AGE_____

WEATHER TEMP._____

ITEM	Perfect Score	Score Allowed	REMARKS
1. Bacteria	40		Bacteria Found Per C. C._____
2. Flavor and Odor .	15		Flavor / Odor
3. Visible Dirt . . .	10		_____
4. Fat.	10		Per cent Found _____
5. Solids not Fat . .	10		Per cent Found _____
6. Temperature . .	10		Degrees F. _____
7. Bottle and Cap . .	5		Bottle / Cap
TOTAL .	100		

PRODUCER_____

ADDRESS_____

_____
TECHNICIAN

DATE_____192___

(NOTE : Scoring Instructions on Reverse Side)

BACTERIA PER C.C.	PERFECT SCORE 40
Below 500 bacteria per c.c.	40.0
500- 1000	39.9
1001- 1500	39.8
1501- 2000	39.7
2001- 2500	39.6
2501- 3000	39.5
3001- 3500	39.4
3501- 4000	39.3
4001- 5000	39.0
5001- 6000	38.8
6001- 7000	38.6
7001- 8000	38.4
8001- 9000	38.2
9001- 10000	38.0
10001- 11000	37.7
11001- 12000	37.4
12001- 13000	37.0
13001- 14000	36.6
14001- 15000	36.2
15001- 20000	35.0
20001- 25000	34.0
25001- 30000	33.0
30001- 35000	32.0
35001- 40000	31.0
40001- 45000	30.0
45001- 50000	28.0
50001- 55000	26.5
55001- 60000	25.0
60001- 65000	23.5
65001- 70000	22.0
70001- 75000	20.5
75001- 80000	19.0
80001- 85000	17.0
85001- 90000	15.0
90001- 95000	13.0
95001-100000	11.0
100001-120000	9.0
120001-140000	7.0
140001-160000	5.0
160001-180000	3.0
180001-200000	1.0
Above 200000	.0

When the number of bacteria per c.c. exceeds the local legal limit the score shall be zero.

FLAVOR AND ODOR—PERFECT SCORE 15

Deductions for disagreeable or foreign odor or flavor should be made according to conditions found. When possible to recognize the cause of difficulty it should be described as cowy, bitter, feed, flat or strong.

VISIBLE DIRT—PERFECT SCORE 10

Examination for visible dirt shall be made by passing one pint of milk through a cotton disc in a "Lorenz Model" sediment tester. Particles of foreign matter deposited on the disc shall be examined with a reading glass of approximately five magnifications. Cotton should be placed on blotter until perfectly free from excess moisture.

PERFECT SCORE—NO VISIBLE FOREIGN MATTER

Less than 10 particles	9.75
10 to 20 particles	9.50
20 to 50 "	9.25
50 to 100 "	9.00
100 to 200 "	8.50
200 to 300 "	7.50
300 to 400 "	5.00
Above 400 "	.00

If hair or very large particles of sediment are found use judgment in making deductions.

FAT—PERFECT SCORE 10

4 % or over	10.
3.9	9.8
3.8	9.6
3.7	9.4
3.5	9.0
3.4	8.0
3.3	7.0
3.2	6.0
3.1	5.0
3.0	4.0
Less than 3.0%	.0

SOLIDS NOT FAT—PERFECT SCORE 10

8.5%	10.0
8.4	9.0
8.3	8.0
8.2	7.0
8.1	6.0
8.0	5.0

7.9	4.0
7.8	3.0
7.7	2.0
7.6	1.0
Less than 7.6%	.0

TEMPERATURE—PERFECT SCORE 10

50 Degrees F. or lower	10.0
51 to 55	8.0
56 to 60	6.0
61 to 65	3.0
66 to 70	1.0
Above 70 degrees	.0

BOTTLE AND CAP—PERFECT SCORE 5

Hood cover over seal	5.
San Lac seal or its equivalent	4.75
Common bottle cap	3.0

Deductions may be made for tinted glass or partially filled bottles. Leaky caps, or broken tops, or other conditions permitting contamination of milk, or detracting from the appearance of the package, use judgment in scoring.

The Commission believes that all milk should be classified by dividing it into three grades, which shall be designated by the first three letters of the alphabet. In addition to the letters of the alphabet used on caps or labels, other terms may be allowed if the same are not the cause of deception. A letter designating a grade to which the milk belongs shall be conspicuously displayed on the bottle cap.

Requirements for the three grades shall be as follows: Grade "A." Milk of this class shall be produced from cows free from disease, as determined by the tuberculin test and by physical examination, and shall be produced and handled by employees who have been found free from disease, as determined by medical inspection at the hands of the Health Officer. Milk of this class must grade 90 or more points out of a possible 100 by the foregoing score card, and must be produced by a dairy that scores not less than 85 points on a U.S.B.A.I. score card.

Grade "B." Milk of this class shall be produced from cows free from disease as determined by physical examination and tuberculin test of all cows composing the dairy herd at least once each year; and shall be produced and handled under such sanitary conditions that the milk shall grade from 80 to 90 out of a possible 100 points on the foregoing score card. Milk in this class shall be produced by a dairy scoring not less than 80 points on the B.A.I. score card.

Grade "C." Milk of this class shall be produced from cows that have been tuberculin tested within twelve months, and have been found to be free from injury or disease by physical examination, and shall be produced under such conditions that the said milk shall grade from 70 to 80 out of a possible 100 points on the foregoing card. Milk in this class shall be produced by a dairy rating not less than 70 on the B.A.I. score card.

GRADING OF MILK

It is the sense of the Commission that there is no escaping from the conclusion that milk for sale must be graded just like other commodities, such as tobacco, wheat and cotton, are graded. The merchant whose stock in trade is milk must not only judge of the food value, but likewise of the sanitary character of the commodity which he offers for sale to the public. There appears no logical reason for believing that fruit that has begun to decay is particularly unhealthful, but certainly it should not be sold for the same price as fruit that is sound. High grade milk, fresh and cold, will cost more to buy from the producer, and properly so, and therefore sell for more to the consumer than does a low grade, stale article. We believe that the Commission's most important work has been endeavoring to classify or separate milk into different grades. We have labored to make the grading system as simple as possible and, at the same time, to distinguish between milks, the sanitary character of which is essentially different. It is our belief that milk grading offers a solution that is satisfactory for most of the sanitary, as well as economic, problems which have heretofore been an obstacle in efficient control of milk and that the same is practicable for even small communities to adopt a grading system with its resultant benefit.

The Commission recognizes the fact that the grade of a milk supply cannot be determined by the analyses of a single sample, therefore it is recommended that not less than five samples be examined during a period not to exceed 60 days. The average grade shall determine the grade or class to which the supply belongs. The dairy farm shall be scored not less than once each 60 days and the last rating only within this given period shall be considered in arriving at the final grade.

The Commission recommends that all milk falling below the requirements for Grade "C" be pasteurized or sold only for cooking purposes.

ADMINISTRATIVE EQUIPMENT

The Commission recognizes that standards are useless unless properly safeguarded and enforced. The main objection that has been raised to a grading system for milk is the difficulty of insuring that milk labeled as of a certain grade is actually of that grade when delivered to the consumer.

"The prime requisite for efficient milk control is that Health Departments shall be adequately equipped with men, money and labora-

tory facilities. The Commission is of the opinion that satisfactory results cannot be expected from laws when there is not sufficient appropriation, and when there is no machinery for the enforcement. A survey of the money appropriated for milk control shows that in the majority of municipalities this is entirely insufficient for public needs."

"The key to the solution of the problem of the proper use of grade labels is the laboratory. The establishment and operation of an efficient milk testing laboratory is commonly supposed to be an item of great expense. This, however, the Commission is convinced, is a mistake, since there are numerous laboratories scattered over the State, not only private but public, which are inexpensive and operated at low cost. By efficiency methods a large number of tests can be made at a very low cost. Even small communities can afford to maintain and operate such laboratories. Where for any reason it is not possible to do this, it has proven to be practicable in other States to enter into laboratory arrangements with other cities doing such work, and even several small communities can combine in the use of a common laboratory."

BACTERIOLOGICAL LABORATORY TESTING OF MILK

Concerning the methods which should be used by Public Health laboratories for the bacteriological examination of milk the Commission unanimously recommends the standard methods of the American Public Health Association Laboratory Section.

Bacteria and bacterial testing have been considered more in detail than any other item appearing in the foregoing card. Every phase of the relationship of bacteria to the sanitary character of milk, as well as to the infectious diseases transmissible by milk has been earnestly considered. The significance of bacteria in milk and methods of testing have been considered in detail, not only from the personal standpoint of the bacteriologist, but from the administrative standpoint of the milk control official.

The Commission recognizes that the number of bacteria in milk is controlled in the majority of instances by three factors: foreign matter, temperature and age. Only in the minority of instances are the bacteria of specific disease present. The routine methods for examining milk have, therefore, as their chief purpose, the control over foreign matter, temperature and age. The only practical way of protecting milk supplies from infection by the bacteria of infectious disease is by medical, sanitary inspection and pasteurization.

In conclusion, the Commission desires to state that a great amount of data was at hand that is not embodied in this report, such as distance of haul of various producers from their respective markets, conditions of production and distribution, etc.

It may appear at first glance that the system herein outlined may not be practical for small departments to adopt, but the Commission is of the opinion that the seven factors appearing on the foregoing card are all important to the extent that not one may be omitted in arriving at an intelligent grade of a given milk supply.

We earnestly recommend that the North Carolina Public Association appoint a permanent milk commission. We further recommend that ways and means be devised whereby meetings may be held for serious study of the State's milk problems as it relates to public health work. This body to be named the "Milk Commission of the North Carolina Public Health Association."

Very respectfully submitted,

J. H. Epperson, B. S., *Chairman.*
L. B. McBrayer, M. D.
W. A. McPhaul, M. D.

DISCUSSION

Dr. J. H. Hamilton, Wilmington: I would like to get a little more information as to what is proposed to be done about this matter. The report undoubtedly represents a great amount of work by the Committee, and of research into the matter of grading. I would like to know if it describes the method in common use in other communities. I am more or less familiar with the system used in New York City, which has been recently adopted in Richmond and Norfolk, using the Bureau of Animal Industry score card for methods and equipment. It seems to me that Mr. Epperson's standard for Grade A is considerably higher and would be more difficult to attain. This seems really ten per cent higher than the standards in effect in New York City. I know by the way the milk inspectors grade them there it takes a crackerjack dairy to get 75 per cent, and it would take a most unusually good dairy to get 85 per cent. I note also that for Grade C he has 70 per cent, whereas in New York City it is 40 per cent. Of course, I know that in New York they do not allow them to sell anything below Grade C, and they make them pasteurize everything under Grade B.

Mr. Epperson: I might say that this is an exact reproduction of the Bureau of Animal Industry milk score card, with certain exceptions. The changes are in this respect, bacteria and temperature. Flavor and odor we have cut down to 15 points, and put five on bacteria and the other five points we put on temperature.

With reference to Grade A milk, we realize that is pretty hard to make, but we feel that a premium should be placed upon those people who, by conscientious effort, get up into that class. If we had made Grade C milk Grade A we would have a bunch of dairymen clamoring to get up into that class, but when they attained it they would not make further effort. In my town I feel sure that we have several dairymen who would get into Grade A class and stay there. We are using the old system, the Bureau of Animal Industry market milk card, and under that system we had an average, from 31 sources, under 17000 bacteria per c.c. We have laid stress upon the sterilization of utensils, and have checked up the results of the sterilizers, and we know that the utensils are sterile. We have laid stress upon cooling. We lay

particular stress upon the storage of milk and upon the delivery of milk at a low temperature. I believe that 75 per cent of our supply is being delivered at a temperature of from 50 to 55 degrees, and of course all those factors have an effect upon the bacterial count.

We do not say that this system of grading is perfect, but what we would like to see is an uniform system of grading, so that all the health departments could get together and adopt it, and if we could put on a market milk contest in the State, in which all the health departments could compete, we would have something which would create greater interest in milk control work.

The method of grading is flexible. If there are certain features which could not be used by the individual health officer, they could be disregarded.

Dr. Hamilton: I am not familiar with that score card. I have been using the U. S. Bureau of Animal Industry Dairy Farm score card, and I notice that it differs somewhat in the matter of cooling. There is a much higher total number of points for cooling than is indicated on the score card just referred to. I do think that it would be of very great value to all the full time health departments that devote any time at all to milk supplies to have a State dairy inspector. In our own work in New Hanover we find that sometimes the dairymen appeal from our scoring. It would help us a great deal if, when dairymen appeal from our scores, we had an authority in the State to whom we could appeal.

Mr. Epperson: That point is, I think, very good. A man comes along and says, "You fellows have your own pet system of grading." If we could say that we have a system approved by the North Carolina Public Health Association, that has been worked out and adopted, this would answer a great many of these complaints.

Now, in regard to temperature, the market milk score card does not allow any credit for milk over sixty degrees. They give credits in this way: Below 50 degrees, 5; 50 to 55 degrees, 3; 55 to 60 degrees, 1 . Now, our score card is as follows: 50 degrees F., 10; 51 to 55, 8; 56 to 60, 6; 61 to 65, 3; 66 to 70, 1; above 70, 0. It puts a premium on cooling to any extent, even though he may have violated the law and may have sold his milk above the proper temperature. We do not want to prosecute people; we have to bring pressure to bear in some other way than by prosecution. I am the last man in the world to take a milk dealer into court if any other method will answer.

Dr. S. A. Nathan, Chapel Hill: I have had a little experience in milk inspection, and if we can adopt some system of uniform grading it would be a good thing. I thought that perhaps if this method of grading were approved by the Public Health Association the State might take it up and make some State regulations. If we can go out and say to the dairyman that these are State laws and regulations, it is much easier to get co-operation from them. If we can adopt this

report with the idea of the State's possibly adopting some regulations in the future, it will go a long way toward getting better milk. I move that the report of the Committee be adopted.

Motion seconded and carried. Adjourned.

MONDAY, APRIL 24, 7:45 P. M.

HEALTH PLAY

"The Health Champions"

By a Group of Modern Health Crusaders from Winston-Salem Schools

VALUE RECEIVED FOR MONEY SPENT IN PUBLIC HEALTH WORK, AS SEEN BY A COUNTY COMMISSIONER

W. W. Dawson, M. D., Grifton

In 1916, Pitt County determined that it would take such precautions as might be necessary to prevent the running at large of transmissible diseases, and after mature and deliberate consideration, concluded that the best step to take was to employ a whole time Health Officer, in conjunction with the State Board of Health.

As soon as the department was established, it began to function in the usual way and with as great a degree of efficiency as was possible under the circumstances. Typhoid fever, in a given area, more than any other disease, shows the sanitary condition of such an area. From the early nineteen hundreds to 1915 inclusive, the number of cases of typhoid fever in Pitt County varied from 600 to 1,000 cases yearly, an average of about 800 cases per annum. The report of our very efficient health officer to our Board of County Commissioners, shows very strikingly the rapid improvement of the typhoid situation in our county, and I shall take this as a basis on which to make a monetary estimate of the cash value to the people of Pitt County of their health department.

The report of the Department to which I refer, shows there were fifty-six cases of typhoid fever in the county in 1921—our population is about fifty thousand. I assume that we would have had the average number of cases during 1921 had we not had the whole time health officer, and I believe the assumption is correct. The average number of cases for sometime prior to 1916 was about 800. Therefore if 1921 was a normal year, from the standpoint of health, and I believe it was, our county under the old system would have had not less than 800 cases, when, as a matter of fact we had only 56, showing a saving in the number of cases of 744.

What does this indicate from a monetary standpoint? Let us see. The morbidity period of typhoid fever is about 60 days. I think that it is reasonable to calculate that it costs $10.00 per day to be sick—that is nursing, doctor bill, medicine, cessation of work, etc, to say nothing of the suffering of the patient and anxiety attached. This shows the estimated cost to be $446,400.00. I think it fair to assume we would have had a 10% mortality. I also think it very conservative, to say that the life of an individual is worth $1,000.00. I know the people of Pitt County are worth more than one thousand dollars a piece. This being the case, the 10% mortality would represent $74,400.00 for these 744 cases. I am also quite certain it would have cost all of $50.00 a piece to bury the victims. This would make a grand total of $523,520.00

The following table will show exactly what I mean:

Previous to the year 1916, cases of typhoid annually	800
Whole number of cases typhoid, 1921	56
Reduction of cases	744
Morbidity reduction, estimated at 60 days each	44,640
Estimated cost of these cases at $10.00 each per day, in nursing, medical bills, incapacity to work, etc.	$446,400.00
Ten per cent mortality in these 744 cases at $1,000.00	74,400.00
Burying these 74.4 at $50.00 each	3,720.00
Total reduction	$523,520.00

Let us study the balance sheet for typhoid. It cost Pitt County last year $4,800.00 to maintain its health department, which in money value, saved $523,520.00 for typhoid fever. Does it pay in dollars and cents to have a whole time health department? It does, in Pitt County, for typhoid fever alone, to say nothing of other diseases.

This reduction in typhoid fever cases being easily reducible to money value and demonstrable on paper, as great as the monetary saving is, to my mind shows only a fractional part of the real value of our Health

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The number of cases of typhoid fever in our county from 1900 to 1915 inclusive was determined as follows: The number of these cases treated by myself each year, was multiplied by the number of practicing physicians in the county. If we take:

Reduction in dollars from typhoid fever	$523,520.00
Estimated reduction from other transmissible diseases	$330,000.00
Total saving in 1921	$853,520.00

Divide this by cost of Health Department and we find that we have a saving of $177.00 for each dollar spent.

Department. A further study of the report of the health officer shows there were 804 cases of transmissible diseases reported in the county during 1921. We have already accounted for 56 cases of typhoid fever in our discussion. Now, let us turn to the remaining 748 cases as shown by the following table:

Measles	14 cases
Smallpox	140 "
Scarlet Fever	59 "
Whooping Cough	240 "
Diphtheria	175 "
Chickenpox	103 "
German Measles	4 "
Septic Sore Throat	10 "
Infantile Paralysis	3 "
	748 cases

You will observe that of this number 14 cases were measles. These cases were more or less widely distributed over the county and it is indeed a remarkable showing that the cases were held down to so few. Under the old system, such as we had in Pitt County prior to 1916, I am quite confident we would have had over 1,000 cases, however, I shall not take this under consideration, because this is only an opinion, although I am sure it is conservative.

You will notice also, that there were only 175 cases of diphtheria. It is my judgment that we would have had many times this number under the old regime.

There were 59 cases of scarlet fever. Who can tell the terrible scourge that would have resulted from scarlet fever under the pre-department system, it being so widely distributed in this case? In scarlet fever, the mortality is exceedingly high and the morbidity is even worse. No man can put down in dollars and cents the value of the health department in controlling this epidemic in 1921.

This report includes 240 cases of whooping cough. Those of us who have been practising more than twenty years, recall vividly the fearful panorama which passed before us each day during an outbreak of whooping cough—complications of all kinds, sequallæ of every description with a high mortality. Is it possible to calculate the savings in time and money, to the tax-payers of Pitt County, by the Health Department, in controlling whooping cough during the recent year? I think not.

I do not deem it necessary to discuss in detail the other items of the above table. Suffice it to say that in my opinion, we would have had under the old system, at least four or five times the number of cases we did have, making 3,500 or 4,000 or even more cases of illness from these transmissible diseases, if we had not had our health department.

But what of the dollars and cents involved? Let us assume that of the 4,000 probable additional cases, we would have had a 5% mortaliy

which means 200 lives, which would cost us $200,000.00, even in slavery times, plus $120,000.00 for the morbidity period of these cases, which we will assume would have been 30 days each at $10.00 per day. This represents a total saving of $330,000.00.

TABLE

Estimated number, old system, five times	4,000 cases
5% mortality, at $1,000.00 each	$200,000.00
200 funerals, at $50.00 each	10,000.00
30 days morbidity period, 12,000 days at $10.00 per day	120,000.00
	$330,000.00

Again, let me ask the question. Has the whole time health department paid in dollars and cents in Pitt County? I think all will agree with me when I say, "*Well*, I think it has."

If there remains one yet who is skeptical as to the money value of this work, let us go further. It is a well recognized fact that teeth, tonsils, adenoids, and imperfect eyes cause a great number of the repeaters in our public schools. I am sure I am safe in saying that Pitt County is losing thousands of dollars every year because of the number of these children that have to take their work over, session after session, due to the defects above referred to.

Our health officer in his report says, "We were unable to have an adenoid and tonsil clinic in 1921, due to the fact that there were not enough funds available. In making examinations of the school children I found so many with defective tonsils and adenoids that it was absolutely necessary for these children to be taken care of in some way." I make this quotation to show the probable number in our county which needs attention. If we add the usual ratio of defective teeth and ears, we can begin to surmise as to the number of children in school who need these deficiencies corrected, and can further guess as to the number of those who have defective organs, that are school repeaters. While I know of no way, and there is no known way, at which we can arrive at anything like an accurate estimate, it is my judgment that Pitt County is losing because of its school repeaters, a large sum, perhaps many times more than its entire health budget.

Further, it is a well-known fact that a large per cent of the diseases of the heart, kidneys, nervous system, gall bladder, stomach, etc., of middle adult life, are caused by focal infections located in the special organs, such as the sinuses of the nose, tonsils, chronic ear discharges, teeth abscesses, etc. If you ask me what of the monetary value in this line of work, I should be forced to answer that while it is the merest speculation, it will total more than a dozen times the cost of the whole health department for one year.

Again, I notice in the report of our health department, references to the work in soil pollution, mosquito control, limited amount of work in tuberculosis, limited dental work, due to lack of funds, with 667

miscellaneous examinations including life extension, 295; lunacy 37; institutional 14; teachers 220. This indicates public saving in a small rather than a large way, to say nothing of the large educational efficiency service value.

If the 4,836 people in Pitt County who were vaccinated by the health department in 1921 against typhoid fever and the number that were given toxin-antitoxin and the other vaccines, had been forced to pay even a reasonable fee for the professional services and the vaccines, it is very probable that only a small number would have been immunized. It may be said that we cannot estimate the value in dollars and cents which has been saved the public in these free vaccinations. I think I can raise the question with propriety once more—does it pay Pitt County to have a whole time health department? I think I can safely say, in answering, *"Yes."*

I have not gone further into the analysis of the report of the Health Department, taking into consideration the value of the laboratory work, the assistance rendered the venereal clinic, visits to jail, court house, convict camps, the number of services rendered by the modern health crusade unit, and several other things, because I think that the points, which I have emphasized, have already convinced you that we are a long, long ways ahead in dollars and cents because of our local public health service.

In conclusion, let me digress, please, for one moment, from the title indicated by my paper, and observe that we, as a profession, in my opinion are making a great mistake in not putting in the way of the newspapers, etc., wisely of course; conservatively, yes; ethically, certainly; in every nook and corner, articles describing and telling of the value of the public health service, and emphasizing its importance in reducing the death rate, extending life, lessening suffering, and making more efficient the life which is lived.

Let us remember, *forty years of aggressive service is worth more than two hundred years of sub-standard existence.*

DISCUSSION

Dr. G. G. Dixon, Ayden: I do not think, from a monetary standpoint, there is much room for discussing Dr. Dawson's paper. The truth is sufficient. No one could ask for a greater return, monetarily speaking than he has shown Pitt County to receive, 177 to 1.

Instead of undertaking to discuss the paper, I would like to say a word or two further. The paper read here a few minutes ago is not new to you people, it is not new to the doctors, not new to the public health workers. We know that the work done by the North Carolina State Board of Health, in conjunction with the county departments of health, is inestimable in dollars and cents. I do contend, though, that Dr. Dawson's paper is in the wrong place. That paper should be in every home in North Carolina, on the front page, in the biggest type possible to print it, at least once a month from now on. If the people of North Carolina can be shown what they are getting

in return for what they say is extracted in taxes, we shall not have to extract any more. The shekels will be dished out. Public health work is in its infancy, but I am sorry to say that it is bottle-fed, and unless we can get the proper food for it, it will not thrive. The doctors have not always understood; they have seemed to think that it was a tendency toward State medicine, but that tendency in the profession is growing less. Unless we teach the laity the value of public health work, public health work can not do its service. There is only one way to do it—put it before the people. If it is put in bulletin form they will not give it much attention. When we, as a profession, learn to put before the people of North Carolina the value of health, so that it will attract their attention, the average life will go up five or ten years, within fifteen or twenty years.

I thank you, gentlemen.

THE PRESIDENT: The only objection I have to Dr. Dawson's paper was that he handed us too many roses and did not criticise us, as I had hoped that he would do. We want constructive criticism.

DR. J. L. SPRUILL, Sanatorium: There were one or two points in Dr. Dawson's funeral oration which rather struck me, and one point was the praise of the health officers of the State. I do not believe that too much can be said in their praise. But there is another person, who is the right hand of the health officer, and that is the public health nurse, and I do not believe that it would be right to close this discussion without saying something complimentary to her. I believe that in my position and in my work, which takes me from one end of North Carolina to the other, I have an opportunity of observing her work perhaps better than any other man in the State, and I can not say too much for their work. Of course, they are not all perfect, by a good deal. I know of one or two public health nurses in our State who could not get along with the Master (I say it reverently) if He were a health officer. But then I know of one or two health officers who could not get along with the Virgin Mary if she were a public health nurse. These women are really doing more work than they have any business to, more physical labor than any woman ought to do. I would not like to see this discussion closed without saying something in appreciation of them.

DR. J. M. PARROTT, Kinston: I find every year, that I look forward to the meetings of the Public Health Association and I always come and always enjoy its sessions. I think I have attended every one you have had.

Concerning Dr. Dawson's splendid analytical discussion, I make, first, this observation, that his county is a very remarkable and exceedingly fortunate county. It is wonderfully rich in natural resources and is peopled by a splendid folk—perhaps above the average. It is especially fortunate in that it has, in my judgment, one of the very best Chairmen of County Commissioners in the State, Dr. Dawson.

He is not only a very, very, capable physician but he is also a genius for organization and financiering. He has been of great help in his county and has performed a work which will tell for good for many years to come. I wish we had many other Dr. Dawsons distributed throughout the State.

Further, Pitt County is fortunate because it has one of the most capable health officers in our commonwealth. He is a very pratcical man and understands the very fine art of handling people and the value of cold facts. The report he recently submitted to the Board of Commissioners, is a valuable document. In my opinion, all our County Health Officers should learn how to submit facts giving information regarding all phases of Public Health work including financiering of the same. The submission of such data together with intelligent interpretation will accomplish a great deal in impressing the people with the value of this great movement—Public Health work—the large and staggering amount which could be saved with a few dollars judiciously invested and wisely expended in disease prevention as well as disease cure. Dr. Crowell stated that he disliked to include, in mortality tables, savings statistics based on prevention of deaths, that is, the value in dollars and cents of the human life, because eventually the person would die anyway. I think the doctor is in error in taking this position. We all know, of course, that more than one half the houses will eventually rot down or be destroyed by fire or physical violence and yet it is entirely the correct thing to charge to profit and loss, houses which have been destroyed by being burned down. In no other way can such a misfortune be cared for in the proper system of accounting. And so should the dollar value of a lost human life be charged in the profit and loss account of the Public Health department. I sincerely wish that we had a whole time health department as efficient as that in Pitt County, in every county in our State. It would add greatly to the happiness, efficiency, and longevity of our people.

It seems to me that our Health Officers should study and strive more for developing human efficiency, than is being done. I like to see lives saved and I also would like to see those who live, live better. This we cannot do unless we decrease degeneracy, physically, mentally, and morally, and increase efficiency, physically, mentally, and morally.

I did not intend to speak so long, Mr. Chairman, but I could not refrain from doing so. Dr. Dawson's paper has aroused me, as I know it has all of you, and if I were a member of this organization, I would move that it be published in the State papers.

THE GENERAL PRACTITIONER AND PUBLIC HEALTH

W. F. Hargrove, M. D., Kinston

I can say truthfully I am not glad to be here addressing an audience. February 3, 1922, Dr. Register informed me that I had been chosen to write a paper on the relationship of the general practitioner to public health.

I was very much inclined not to do it, but if what he closes with, "But we know of no one better qualified" I feel that I am in the midst of kindred spirits—"Equals in inferiority" but striving for better things. If you don't like what I say blame Dr. Register as he is responsible for my saying anything at all.

In this subject are two clear cut propositions. The doctors' duty and the public's duty.

First, we are doctors of medicine because our Alma Mater conferred this title on us, but we are practitioners of medicine because our State permits it by license.

Practice of medicine, like any other public utility, depending on the good will of the consumer for the franchise regulations that gave it life, requires of us certain things.

If we fail to do these things, then our franchises, "The right to minister to the public for pay," can be taken from us.

The kickers, against the activities of the State Board of Health regulations, as enacted into laws by State legislatures, should be reminded that they are doctors, by virtue of this franchise and not because of their medical knowledge.

But our franchise does not require us to practice medicine for nothing or to minister to the poor without pay, and the doctor that says he will gladly attend anybody that can't pay reminds me of the "Fisherman."

"Who gets up early in the morning and disturbs the household and great are his preparations.

He returns late in evening smelling of strong doings and the truth is not in him."

The protection of the public against disease is a public and not a professional function.

The enactment and enforcement of health laws are functions of the State, just as are the enactment and enforcement of laws for the protection of property. The caring for the poor is no more part of a doctor's work than the rest of the people and the public should pay for it.

The greater part of this duty has been carried by the doctors because they are cowards, afraid not to, for fear of public opinion; and they will continue to carry it until they raise up en masse and refuse to do it. And this will happen unless the public through its agent the State Board of Health, equips county hospitals and laboratories for them to work in.

With this as a preliminary I will now try to say something on my subject as it is being carried out today and will be carried out in the future.

"Oh wad we the power the giftie gie us to see ourselves as others see us, it would from many a blunder free us and foolish notion."

The relation of the general practitioner to public health, sounds very nice, in fact, the expression is a pretty good mouthful; but the

actual practice of it as expressed by the activities of the State Board of Health is to put the doctors between the devil and the deep blue sea.

The dictum is getting to be "If you won't, we will," meaning usually free service; giving something for nothing, if done by the doctors in private practice; but to be paid out of the State health budget if done by a health employee—a taxeater (Oh, how we love taxes when said taxes are paid by the other fellows), for example a dental, tonsil, and adenoid clinic for children. Then a sop to the adult malefactor, a venereal clinic; with a God bless the women, through the Sheppard-Towner Maternity bill sponsored by eight spinsters and one married woman without children called the Child's Welfare Bureau.

They propose to give prenatal advice. This can mean only one thing, *that every pregnant woman must be registered*, so this bureau can get to her to give advice. This was a womans' move sponsored by eight spinsters. Is the joke on women?

Are our homes to be invaded by a Board of political taxeaters to register all pregnancies with the local health officer? Then telling and demanding how your wives must live during gestation, accuse them of being syphilities by insisting on a Wassermann?

If the social reformers really want to do the county a service, they would go home and have a few babies of their own.

It may be that old maids and bachelors are best fitted to raise children, but I believe in the old fashion mother who kisses babies' bumps and cures the pain with a little personal love.

This state of affairs has been brought about by the sins of omission of the doctors. We have failed to be teachers of general health laws and have by our action said, let George do it.

George in this case being the State Board of Health, Red Cross, Federal aids, etc. These various agencies having gotten into action, the doctors are crying from the housetops and by-ways, "Stop the damn-fools!" But the public is catching on to some of the fundamental things of public health after being taught by our secretary of the State Board of Health through the various Bureaus. (And right here I want to commend my friend, Mitchener, as a good bureau chief to pattern after.) Not the necessity *for* but the good *of* vital statistics, reporting contagious diseases, cover up your sneezes, etc. All going to the primal law, "A sound mind in a sound body."

Both of these being in the field of general practice, I am reminded of ye old and new method of procedure.

"The old time practitioner used to call in a one-horse buggy, and his apparatus consisted of one thermometer, two hands, two eyes, and one sixty-horse sense power brain.

The modern city specialist calls in a 48-horse power limousine, accompanied by a nurse, assistant, technician, and a trunk full of apparatus. He too has one thermometer, two hands, two eyes, but the horse power is in his limousine.

Too much overhead charges.

This means that only the rich can afford to be sick. Sickness, like funerals, is getting to be a luxury to be enjoyed exclusively by the rich.

But as the poor, like taxes, are always with us, the doctors have got to help keep them well as a self protection; as we will have to minister to them anyway, whether we would or not.

We will have to teach and practice preventive medicine instead of devoting all our time to treating the sick. Take the lead in all health work instead of following some bureau chief.

It is absolutely essential that the physicians recognize the fact that treatment of diseases of the community is just as much their work as treating the individual.

If this were done then some of these health officers would have to practice medicine and get their pay out of the people instead of an envelope. It would do you good to have to go up against it every now and then. Then you would not be so cock-sure how medicine should be practiced.

Gladstone once said, "the health of the people is the foundation of any country and the care of the public health should be the first concern of every statesman."

Health being the main support to the tripod, health, liberty, and the pursuit of happiness, it behooves the medical profession to stop hiding their lights under a bushel and let the public know what we can do and then do it. Teach the young how to grow strong by having defects corrected, as the solution of the problem of child health will solve the problem of public health.

This will require some thoughts for the good of the other fellow instead of for me and my wife, my son John and his wife.

As thinking is hard work to most of us, we have let the State Board of Health do it, then we promptly devoted our *talking*, but not thinking to destructive criticism, the theme of which is, the Board is doing "something-that-will-affect-adversely-my-private-interest."

Our aims should be one, the public good and this can only be accomplished by our getting together and talking it over.

Our State through its policing power has delegated the health work of the State to the State Board of Health acting through its secretary to see that its sanitary rules and regulations are carried out, to-wit: *Teach the people, but teach them collectively.* And right here come the dangers; whenever the health authorities begin to treat individuals then a conflict is invited.

The health board has taken in too much territory. Ignorance and indifference on the part of the people regarding the value of public health work is the great hindrance. To overcome this is the work of the public health officials; leaving to the doctors individual instruction in the home to carry out specifically what the public has been taught collectively.

This means that the superintendent of health with his aids should meet with the medical society of the county in joint conferences as to how public health work should be carried out.

What particular things should be stressed

There are certain things on which there should be no disagreement, sanitation, pure water, domestic science, correcting defects of childhood, control of infectious and contagious disease, quarantine, etc.

I want to go on record right here as saying that all charity organizations undertaking any kind of welfare work involving public health should not be permitted to engage in such work without permission of the superintendent of health. This will prevent duplications which always lead to inefficiency and extra cost to the public either in taxes or drives for money. In either case the public pays the bills.

Speaking more specifically I will take up some of these items.

Sanitation being the keystone of public health this should be stressed, all the time, by all health officers. Clean up and keep clean, clean minds, clean bodies, clean houses, clean premises, clean communities. This should be taught at clean school houses.

Pure drinking water for every home whether tenanted by white or colored. Let's have no more open wells with the old oaken bucket, as every open well is a cess pool.

The only reason users of well water have not all died prior to this is due to the fact that we become immune to our own filth and if the well is used by many we gradually become immune to the community filth. But before we know it some one has dropped in some filth we are not immune to, say typhoid filth. Here starts an outbreak of fever and no one knows where it came from. Open well, being a menace to public health, should be reportable and condemned.

The twin sister of sanitation is Domestic Science. Mrs. McKimmon, State home demonstration agent, recently said, "I once heard a long lean man say, 'I bear in my body now, and will to my dying day, *marks* of having been *the thing* upon which my wife practiced when she was learning to cook'!" Not all the marking was done by bad cooking, however. The woman who feeds her family the too common diet of meat and potatoes, rice and bread, pie and coffee, and does not know what this diet lacks as surely marks her family as does the woman who has little knowledge of how to prepare food properly.

"No matter what other job a woman has, in nine cases out of ten, the job of feeding the family is thrust on her."

If Mrs. McKimmon's statement as above quoted is true, then this should follow. All girls should be taught the value of food stuffs and how to prepare same fit to eat.

In spite of "Votes of Women" there can be no other way for increase in babies except for the women to become mothers. This means homes and the keeping of homes, and the cornerstone of a home is suitable food properly prepared.

How can a woman do this unless properly taught?

Catch them while they are young and teach them that bread made with the old fashioned rolling pin is a better painter of cheeks than a lip stick and that there never was a divorce when the wife was a good cook.

Teach children what to put in their stomachs rather than where the stomach is and how to keep the skin clean rather than how many bones they have in their bodies.

Here begins the solution of child health which is going to solve the problem of public health.

Have Mrs. McKinmon fit a truck with a cooking outfit and go to every school house in the State and show the mothers how to cook and repeat about every three or four months.

I would suggest it be done in this wise. Invite all the patrons of the school to an *outdoors picnic* and have them bring raw food. Each family to bring the things they were going to have for dinner to feed the family at home that day. With these materials provided, prepare the dinner and feed the crowd. During the eating explain to the cooks—the home keepers, and the prospective cooks—their daughters, why certain food stuff is necessary in their daily diets and the necessity of a garden and a cow for every family. *Teach collectively*, at a clean school house and this school house should become the community club house where the State Board of Health should do its teaching collectively.

Fear has always been a potent factor in the control of diseases, and will be, until the public learns that these can be brought under effective control by prompt reporting and efficient quarantine.

Lack of control in the majority of cases is due to the failure of doctors to live up to the rules and regulations of the sanitary code.

Failure to report *promptly*, not failure to *report*, is where the doctors do most to help spread diseases.

But I can assure you it takes some backbone to report some cases, knowing by reporting we will at present, at least lose the practice of this family, for we are promptly told that Mrs. Jigg's children had the same breaking out and Dr. Inac-Practic did not have a *card* stuck on her house, telling the world her *children* had bumps on them.

Without the co-operation of every doctor in the community in reporting diseases, in assisting in the prevention of diseases, the public health officer is practically helpless.

Kipling says, the law of the jungle is "the strength of the pack is the wolf (this represents the superintendent of health) and the strength of the wolf is the pack." (This represents the doctors in the community.)

Another law of the wild is, "Eat or be eaten." If doctors don't do their part then this is going to be taken from them. The various so-called healings cults are sent on us because of our sins; and not only on us, they are plagues on society as well.

There is a rule in some of the card games that says, when in doubt play trumps. The State requires this of all doctors, when in doubt

play trumps, treat all suspects as real troubles and watch them; report promptly to proper authority if your suspicions are confirmed, thereby earning the right to our franchise, the right to practice medicine for pay. In doing this we are protecting the public, which is our duty.

You notice I have said very little about the general practitioner and for this reason: That in the evolution of medicine as I see it, there soon is not going to be any such critter. For the family physician will be the family health officer and his main business will be to see that his families are kept well.

It will be here that the general practitioner will join hands with public health officials in public health work and it is here where the solution of the problem of child health will solve the problem of public health, which has for its goal, "a sound mind in a sound body."

SUMMARY

In the general unrest, whatever is its cause, taxes plus the cost of high living, is beginning to be the talk of every county in the State; and in these rumblings, are hints at the superfluous cost of superintendents of health, nurses, farm demonstrators and the various activities that have for their object public benefit.

Now if you health officials want to help the people you will have to stop wearing the seats of your chairs slick and get out among the people, touch elbows with them while firing bulletins at them.

Meet the doctors of the county and discuss county problems. Here the practitioner can aid in State health work.

DISCUSSION

Dr. W. S. Rankin: My good friend, Dr. Hargrove, one of the fairest men I ever knew, sent his paper to Raleigh to a mutual friend, and asked that friend to hand it to me, writing that mutual friend that there was some criticism in the paper of the State Health Officer, and that he wanted me to see it before he read it. Well, while the paper was on the way to Raleigh I was on the way to Kinston— not being one of those health officers who wear out the chairs. Now, I call Dr. Parrott and Dr. McNairy to witness that I expressed views in a conference there that, if I had seen his paper, Dr. Hargrove might have sworn I got from him. Later I read the paper very carefully, to see what issues he brings up. Dr. Hargrove comes out good and strong for something the medical profession should carefully consider, and which the medical profession can get rid of if they want to. I said to him the other night that charity practice, so far as the physicians are concerned, ought to pass, that in a county with twenty-five physicians and thirty thousand people the charity work has to be done, but it should rest not upon twenty-five citizens but upon the thirty thousand.

He makes another point, and puts his finger on the crux of this whole question. He says the State says to the profession, "There

is about five times as much disease out there as you are handling. We have sent out investigators and have found that you are telling the truth." There is really about five times as much disease in North Carolina and throughout the country as the medical profession is handling and can handle. The very fact that there exist cases of disease and impairment over what the medical profession can take care of is the sole ground for the health department. The State says that it recognizes the fact that the medical profession has chosen more than can be cared for. Here is a great surplusage of disease, causing a tremendous handicap, killing innocent women and children. This surplusage of disease, from two to five times more than the medical profession can handle, can be taken care of in only one way under the sun, and that is by the medical profession.

We have to create a greater demand for medical science, for the use of doctors. We have to make diseased people understand the value of medical services, and get them to use the doctors more. How can we do that? By educational methods. But we cannot increase that demand by shooting bulletins from Raleigh or by correspondence courses or by sending bulletins on special diseases to the homes where those diseases exist. We can not do it by sending out newspapers, any more than the Baptists or the Methodists could build up their churches by the church papers alone. They have local preachers. So the local doctors should be the preachers of health. This greater demand has to be brought up by the State's going its limit and by the local medical profession's going its limit.

Now, I hear you say that that cannot be done, that doctors cannot make speeches. Yes, it can be done. Let a man be chosen by the county medical society to go out and give lectures, and send him out to meet the people and to talk to them in the country schoolhouses, with an address that perhaps was prepared by the county medical society. Let it be understood that he represents the whole society. That is the first thing we have to do to increase the demand for medical science. That is done by education, and the State Board of Health can never educate to the point where the education needs to be done. The local medical society will have to do it. Then there is only one set of people under God's sun that can supply the demand, and that is the local medical profession. That is what the State Board of Health is trying to do, to make the people understand and appreciate the value of medical science and use it.

To come to the second point, the local medical profession has to be organized to handle community disease as well as individual disease. We shall see within the next few years a complete change in the attitude of the local medical societies. Now, fortunately, we can appeal to the doctor on a broad business basis, and it has to be done. You cannot build up a broader appreciation of the value of medical science without building up the doctor's bank account. The program will help not only the public, and the profession in the realization of its higher ideals, but it will also help the profession in its ordinary, everyday, bank-account needs.

I hate to hear my friend over here condemn the women. If he condemns the women he should also condemn the old bachelors.

I do not want to raise an issue here, because I always like to dodge an issue. Dr. Hargrove said that the State Board of Health is taking in too much territory. I think that when he says that he ought to tell us what territory to take in. I want him to tell me where we are treating disease individually. The only things I know are tonsil and adenoid clinics, hookworm work, typhoid work, and anti-malaria work, and he approves all of it.

Dr. Hargrove, closing the discussion: I have very little more to say, except in reply to Dr. Rankin about individual work. At the present time, I stated, the danger is that the State Board of Health would start out to do individual work. There is a tendency now to that. That is where the danger of conflict is. We always agree that collectively it has to be done by the State Board of Health, but whenever they start out to do individual work that is where the trouble comes. Let the State Board of Health do the work collectively, and leave it to the doctors to go to houses individually and teach the people in the homes what the State Board of Health has taught collectively. We will teach them at home individually. Collective teaching is their part.

Dr. Smith, President: I think I voice the sentiment of this Association when I say that we most heartily and sincerely appreciate Dr. Hargrove's paper. You have voiced, Dr. Hargrove, some of the dangers which I think every health officer is cognizant of, and I believe that your paper will help us to keep in our track. It is very easy for us to slip just a little over the line. Sometimes we are drawn into it by the associated charities worker, who draws us like a mustard plaster, and we just cannot keep out. Therefore I appreciate your paper very much, because that kind of criticism will help us.

REPORT OF COMMITTEE ON REVISION OF CONSTITUTION AND BY-LAWS

The Committee appointed to revise the Constitution and By-Laws of the North Carolina Health Officers' Association so as to make applicable the name, "North Carolina Public Health Association," which name was accepted at the 1921 session of this Association beg to report, viz.:

ARTICLE I—NAME

Section 1. This organization shall be known as the North Carolina Public Health Association.

ARTICLE II—PURPOSE

Section 1. The purpose of this Association shall be to bring into one organization those citizens of North Carolina interested in public health, so that by regular meetings and interchange of ideas they

may secure more efficient co-operation and uniform enforcement of sanitary laws and regulations, and for better dissemination of such knowledge as will make more effective the opinion of the profession in all scientific, legislative, public health, material and social affairs.

ARTICLE III—MEMBERSHIP

Section 1. Any public health officer in the State of North Carolina who is in good moral and professional standing, all members and employees of Board of Health, either State, county or municipal and any other citizen interested in public health.

Your Committee recommends that the entire Constitution and By-Laws be submitted to a committee for thorough revision.

C. W. Armstrong,
J. S. Mitchener,
R. L. Carlton.

The report of the Committee was adopted, and the Committee was continued.

REPORT OF COMMITTEE ON RESOLUTIONS

Resolution No. 1.

Whereas the principles of public health have, with few exceptions, been developed and advanced to their present state by the medical profession; and

Whereas the progress of public health has been such that in the public mind there is an apparent divergency of interest between public health workers and the practicing medical profession; therefore

BE IT RESOLVED that this Association go on record as urging a closer relationship between public health workers and the practicing medical profession, to the end that the mutual interests of these two agencies may be better understood and developed to the advantage of both the public and the profession.

Resolution No. 2.

Whereas the necessity for a closer relationship between the public health workers and the practicing medical profession, rather than a separation of their interests, seems to be so imperative; and

Whereas, because of the increase in the volume of the transactions of this Association, the increased cost of printing of the said transactions entails a burdensome charge upon the State Medical Society; and

Whereas there has developed some sentiment that the transactions of this Association in the future be omitted from the transactions of the State Medical Society; and

Whereas the programs of this Association, now in its twelfth annual session, approximate the usual programs arranged for the Section on Public Health and Education of the State Medical Society; therefore

BE IT RESOLVED that it be respectfully recommended to the State Medical Society that its Section on Public Health and Education be hereafter omitted and that the North Carolina Public Health Association be substituted for the same; and

BE IT RESOLVED, further, that a committee from this Association be appointed to confer with the proper authorities of the State Medical Society at this meeting for the purpose of making the necessary adjustments to carry out this recommendation.

Resolution No. 3.

Whereas the work of the superintendents of public welfare is so closely allied to that of public health; and

Whereas such a valuable addition to today's program was made by one of these superintendents; therefore

BE IT RESOLVED that an invitation be extended to the superintendents of public welfare, through their State Director, to cooperate in every way possible with the work of this Association.

Resolution No. 4.

Whereas it is felt that this meeting has been one of the most interesting and instructive sessions in the history of the Association, therefore

BE IT RESOLVED that the sincere thanks of this Association be extended to all who have contributed the splendid papers and discussions on the program.

Resolution No. 5.

Whereas the Robert E. Lee Hotel management extended, without charge, the use of this hall, which is so suitable for the purposes of this meeting, and have been so courteous to the Association in every way; therefore

BE IT RESOLVED that they be given the thanks of this Association for their contribution to the pleasure and success of this meeting.

Respectfully submitted,

K. E. Miller, *Chairman*,
P. P. McCain,
N. B. Adams.

The report of the Committee on Resolutions was adopted, and the members of the Committee, Doctors Miller, McCain and Adams, were appointed as the committee to confer with the State Medical Society and were directed to report to the Committee on Revision of the Constitution and By-Laws. Resolution No. 2 was referred to the Committee on Revision of the Constitution and By-Laws.

The following resolution, offered by Dr. A. C. Bulla, and was referred to the Committee on Milk Standards:

1. That a contest be carried on in conjunction with the North Carolina State fair, endorsed by the Health Officers Association, and under the direct supervision of the Dairy Extension Service of the State.

2. That each city maintaining market milk inspection be assessed pro-rata for premiums for this competition, and the individual entries a small entrance fee. Pro-rata higher entry fees being charged for entries coming from cities or counties not subscribing to the general fund.

ELECTION OF OFFICERS

The following officers were elected: President, Dr. A. C. Bulla, Raleigh; Vice-President, Dr. C. W. Armstrong, Salisbury; Secretary, Dr. F. M. Register, Raleigh.

Adjourned.

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